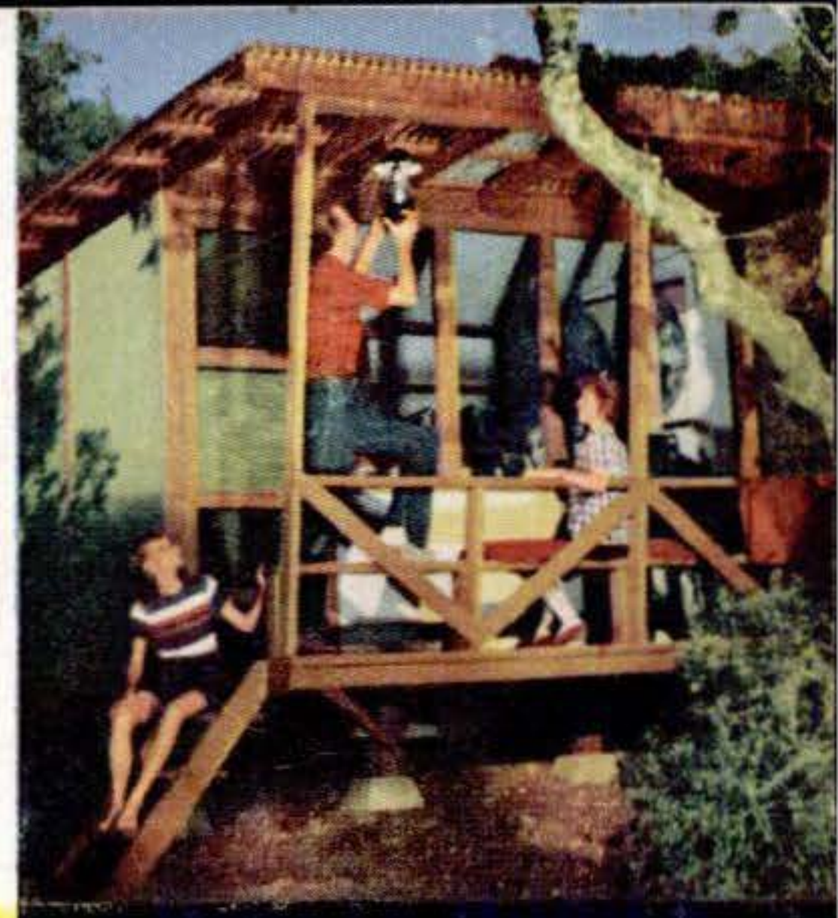
POPULAR SCIENCE

MONTHLY

MECHANICS - AUTOS - HOMEBUILDING



How to Build a CABIN FOR $200

25¢
February

What You'll Find Under the Hood of the New Chevrolet

PAGE 100

Copyrighted material

New! GIANT BEACH BALL OVER 3 FEET HIGH

Special Introductory Offer!

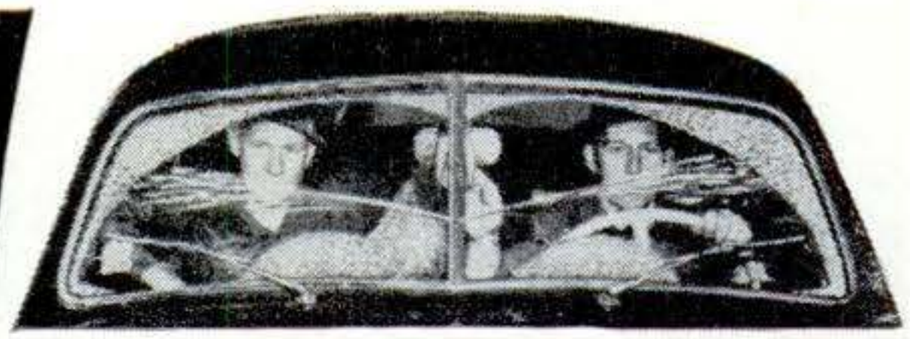
$1.00

100% GUARANTEED AGAINST BREAKAGE

1

Exciting new fun for young and old! Gay, multi-colored giant rubber ball features one piece seamless construction is strong enough to stand on! Patented blow-up feature can't leak! Inflates easily by mouth or pump. Replaced without charge if you ever break it under ANY condition!

SAVE UP TO 75% ON BRAND NEW GUARANTEED items for auto, workshop, home, sport and hobby!



NEW WINDSHIELD WASHER

Trouble-Free Operation Guaranteed

Test this new safety accessory on your car TEN DAYS AT OUR RISK! Watch it outperform $8.95 custom models. Visible fluid supply, can't clog, easy to operate. One filling cleans windshields 35 times. EASY TO INSTALL. Supply limited at this amazing low price. Order yours today!

Introductory Offer: **$1.00**

6

WAREHOUSE

YOUNG BUYS in tremendous lots, to sell quality products at fabulously low prices. When our huge warehouse gets too crammed, we slash prices recklessly! It's YOUR chance to snap up many a super-bargain. ORDER TODAY.

For Men of Action:

VINYL PONCHO

Roomy because it's made for men of action. Hood, drawstrings, snap closures make snug, waterproof fit. Opens flat to 27 sq. ft. shelter half or ground cover. Young's bargain price includes carrying pouch.

2

$2.95

RAGLAN TAILORED Vinyl RAINCOAT

Smartly styled, tailored with reinforced snaps for real protection. Waterproof gray vinyl can't crack or peel. Small, med., lg.

COMPLETE With matched Carrying Case **$1.95**

3

Date Changes AUTOMATICALLY EVERY DAY

7

Included FULL YEAR GUARANTEE And Lifetime Service Certificate

AMAZING *New* WATCH with MECHANICAL BRAIN

• IT REMEMBERS • IT TELLS TIME • IT TELLS DATE

MEASURES SPEED — MEASURES DISTANCE — RECORDS UP TO 12 HOURS — OVER 40 QUALITY FEATURES!

Precision Jeweled. Imported Swiss Movement. Accurate. Dependable. Push-Button Stop and Start. Red Sweep-Second Hand. Unbreakable Crystal. Triple Chrome Plated Case. Shock Resistant. **Nite-Vue Radium Glow Dial.** Anti-Magnetic. Times Shop work. Times Photography. Times Sports. Times Races. Times Lab. work. Times Planes. Expansion Band Included.

Compare It at $50.00

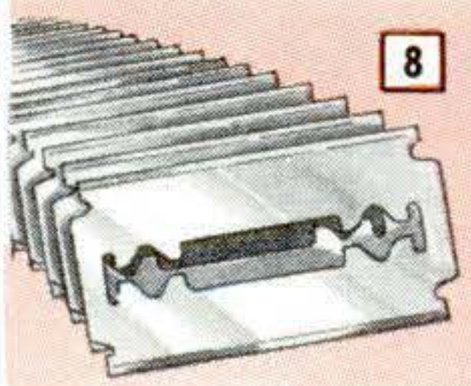
$8.95 PLUS 90c FED. TAX

SEND NO MONEY

Gas Saver! Trouble Shooter! GASOMETER

4

Amazing motor tune-up gauge is easy to install; checks spark plugs, rings, carburetor, muffler, tail pipe. Ten-day trial at our risk! Only . . . **$3.95**

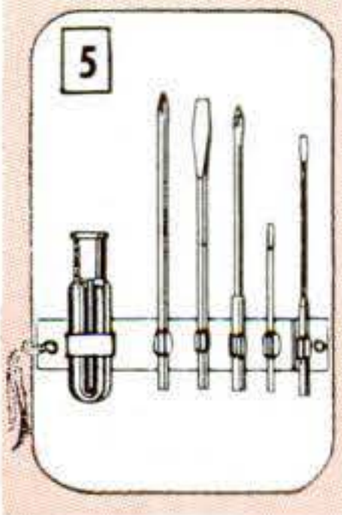


8

RAZOR BLADE SCOOP

Here's keen value in precision-honed double edge blades; fit all popular razors. Top quality steel, super-keen edges make this a terrific buy. Order today for FREE BLADE SHARPENER included at no extra cost! Good deal!

100 BLADES For ONLY $1.00

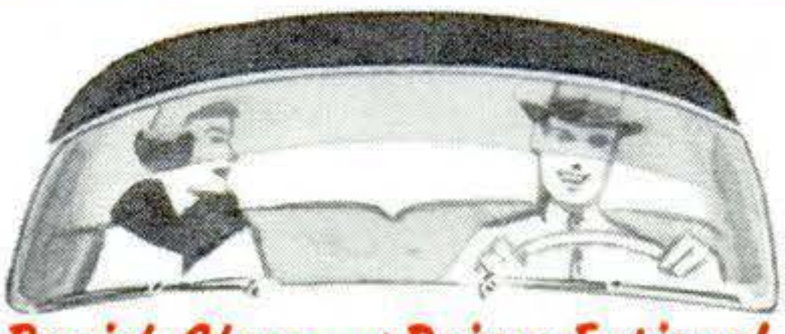


5

Amazing Screwdriver Buy!

5 in 1 KIT

A screwdriver for every job. Precision-made from hardened tool steel. Three standard screwdrivers, 2 Phillips type screwdrivers plastic pouch. for only . . . **$1.00**



Banish Glare and Driver Fatigue! CLEAR-VIEW SUN VISOR

9

APPROVED by Police, Safety Bureaus, Insurance Co.'s

Drive with perfect safety and comfort. Visor adheres securely to windshield without tools; no screws, bolts or glue! Pay only: **$1.00**

AMAZING VALUE:

10

Take Secret Pictures MINIATURE CAMERA

Take sharp, clear pictures with regular 828 film. Polished lens, fool-proof shutter. Unusually small — fits the palm of Your hand **$1.00**

FREE 10 Day Trial

Young Products, 2605 Elmhurst, Detroit 6, Michigan

Copyrighted material

Soft Morlen bristles can't mat or tangle

ALL BRASS COUPLINGS LAST A LIFETIME

Cars practically wash themselves with

Automatic CAR WASHER

11 STOP SPENDING MONEY ON CAR WASHINGS

Attach this miracle washer to your garden hose and watch it float away dirt and grime. Unbreakable plastic head, rustproof aluminum handle. Soaks, scrubs, washes, rinses automatically. A few washings will repay its low cost!

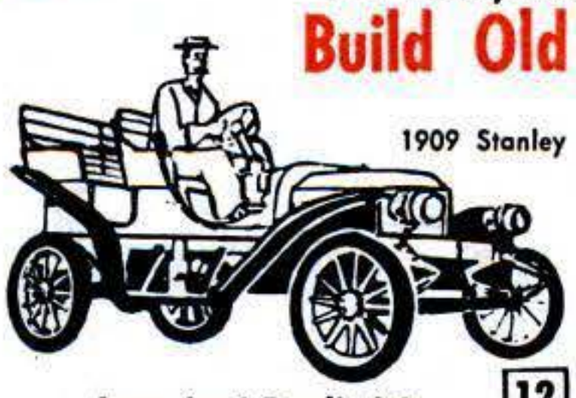
SPECIAL OFFER **$2.95**

Deluxe model, 4-ft. long, with shut-off valve: $3.95

CLEARANCE

IT'S EASY, IT'S FUN to make authentic collection pieces!

Build Old Time Scale Model CARS



1909 Stanley Steamer (illustrated) Model T, Model A Ford, 1900 Packard or 1903 Cadillac.

Amazing! Realistic! 12

Special offer SET OF 5 **$3.95**

Complete kits of pioneer autos; ready-made parts include body sections, lamps, wheels, horns. Clear instructions; even a child can make these treasured pieces for table lamps, desk or wall decorations. Order all 5!

New ELECTRONIC WALKIE-TALKIE Communication System

Perfect for room to room, house to garage, etc. No batteries, no tubes. Complete two way telephone system. Works at amazingly long distances. Handy pocket size. Electronic voice powered. No license or permit needed. **Two units complete with wire, ready to use.** Quantity limited. Order today.

14 Complete 2-UNIT SET
- No Batteries
- No Plug-In

$3.95 LIMITED OFFER

It's COMPLETE!

Amazingly Compact

Electric SPRAYER

Plug it in and adjust knob to spray paint, enamel, lacquer, varnish, insecticide, garden spray, water, textile dyes. You'll marvel at the efficiency of this wonder sprayer. Try it in your own shop AT OUR RISK for 10 days. You'll find it handy for so many shop and home needs.

15

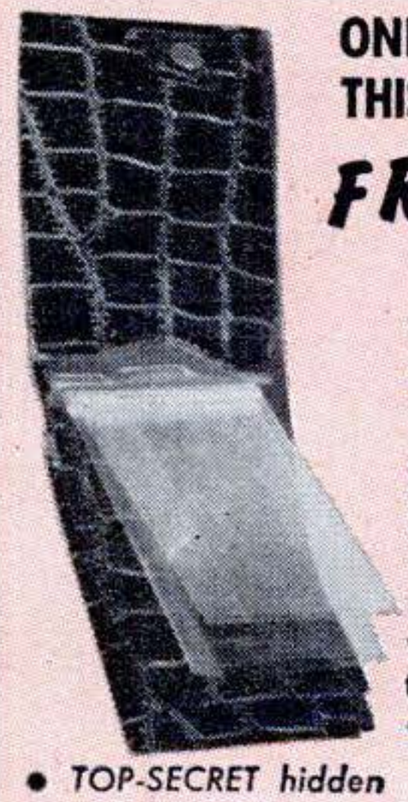
$7.95

RUSH YOUR ORDER TODAY! TRY IT IN YOUR SHOP 10 DAYS AT OUR RISK

Sensational **BALL POINT PEN OFFER**

Unbelievable value! Not just one . . . not three . . . but EIGHT BALL POINT PENS for $1. Jet black case with handy clip. Writes for months without refill. Guaranteed. 13

8 PENS for ONLY **$1**



ONLY YOUNG MAKES THIS WONDERFUL

FREE OFFER!

Rush your order of $2.50 or more, and we'll include this SURPRISE GIFT: a handsome billfold, in alligator-grained plastic. Rich mahogany finish and electronically welded seams make this wallet rich-looking and practical.

- *TOP-SECRET hidden compartment*
- *Mahogany finish*
- *Alligator grain*
- *Leather-like plastic*
- *Built-in change holder*
- *Identification card and picture holders.*
- *FREE with order, while 1000 last!*

SEND NO MONEY!

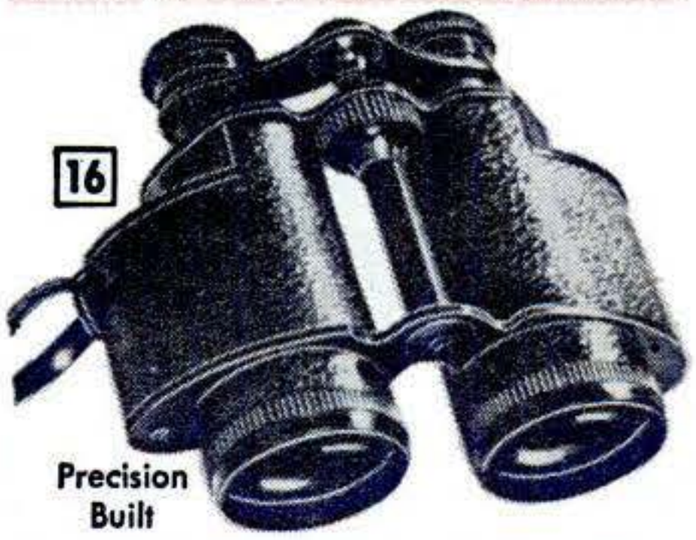
MORE THAN YOUR MONEY BACK

Keep your order or send it back, the wallet is YOURS TO KEEP! Order today, for this extra gift bonus. It's a beauty!

NEW, FULLY GUARANTEED HI-POWER BINOCULARS

Bargain of a lifetime! Light-weight, durable and wonderfully clear; perfect for sports, theatre, travel. Smartly styled like costly imported models. Opens to 7" x 6" size. Clear-view 3-power lens. Carrying strap included. Bargain!

Not for $10
Not for $5
But Only
$2.98



16

Precision Built

SPECIAL LIMITED OFFER! ORDER TODAY AT OUR RISK.

RUSH THIS COUPON TODAY
to YOUNG PRODUCTS 1057 2605 ELMHURST, DETROIT 6, MICH.

Please Rush Items Whose Numbers I Have Circled

If not thoroughly pleased, I may return them for full refund of Purchase Price. I may keep the wallet in either case.

1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16

☐ Check here if order totals $2.50 for FREE Wallet.

NAME_____

ADDRESS_____

CITY_____ STATE_____

☐ Send items listed. I will pay postman plus postage.

☐ I want to save postage. I am enclosing full payment. Same money back guarantee applies.

Copyrighted material

America's Leading New-Idea Magazine for 81 Years

Founded 1872, Vol. 162: No. 2

POPULAR SCIENCE

REG. U. S. PAT. OFF. *Monthly*

Mechanics and Handicraft

REG. U.S. PAT. OFF.

VOLTA TORREY, EDITOR • Howard Allaway, MANAGING EDITOR
Howard C. Jensen, ART EDITOR • Frank Rowsome Jr., ASSISTANT MANAGING EDITOR

SENIOR EDITORS: Harry Walton (Mechanics & Handicraft), Hartley E. Howe (Features), Martin Mann (Copy).

ASSOCIATE EDITORS: Aiden P. Armagnac, Henry P. Comstock, Devon Francis, Sheldon M. Gallager, Kendall W. Goodwyn, Wesley S. Griswold (Chicago), Herbert O. Johansen, Herbert R. Pfister, Denis Sneigr, Robert P. Stevenson, Ruth Westphal, Andrew R. Boone (Los Angeles).

ART: Harry Samuels (Director), Herbert Anthony, Rolf O. Erickson, Eric Karminski Jr., Richard Meyer, Frances Cooper Daniels.

PHOTOGRAPHY: W. W. Morris (Director), Hubert Luckett, Orlando Guerra.

EDITORIAL ASSISTANTS: Harriet Trowbridge, Carol Ennis, Carol Schapiro, Georgette Sparks, Katharine W. Townsend, Jeanne Van Houten.

FEBRUARY, 1953

How You Restore a Model T Ford

***Rusting for years** in an unroofed barn, this tin lizzie had been taken over by the field mice and birds. Then Associate Editor R. P. Stevenson spotted treasure trove beneath the rust, lugged it off for rebuilding. For his account of its reconstruction, see page 190.*

Cars in the News..... 97
Chevrolet Gets Power Steering.....100
Jets on Skis Can Use Ocean Airfields.....107
Engine Helps Steer '53 Studebakers.....114
This House Grows with Your Family.....120
Does Anybody Live on Mars?.....126
Refrigerator Cools New Oldsmobiles.....131
Small Trains Are Big Business.....152
Wilbur Shaw Reports on the New Buick.....159
Biggest Trailer Crosses Continent.....166
How to Build a Cabin for $200.....179
Your Own Fire Alarm May Save Your Home..186
Gus Meets a Deadline.....196
What a Compression Gauge Can Tell You....201
How to Panel with Plywood.....204
Why Your Senses May Tell You Fibs.....220
How NOT to Take Pictures.....224
Routing in the Lathe.....230

(More features and departments are listed on page 4.)

Godfrey Hammond, PUBLISHER • Stephen P. Glennon, ADVERTISING DIRECTOR

ADVERTISING OFFICES: NEW YORK—353 Fourth Ave.; CHICAGO—360 North Michigan Ave.; DETROIT—820 Book Bldg.; SAN FRANCISCO—681 Market St.; CLEVELAND—328 Citizens Bldg.; LOS ANGELES—2550 Beverly Blvd.
EDITORIAL OFFICES: 353 Fourth Avenue, New York 10, N. Y.

Published monthly at 353 Fourth Avenue, New York 10, N. Y., by Popular Science Publishing Co., Inc., Godfrey Hammond, President and Treasurer; R. C. Wilson, Stephen P. Glennon, Vice-Presidents; F. W. Briggs, Secretary. Entered as second-class matter Dec. 28, 1918, re-entered as second-class matter July 26, 1948, at the Post Office in New York, N. Y., under the act of March 3, 1879; additional entry as second-class matter at Dayton, Ohio. Entered as second-class matter at the Post Office Department, Canada. Printed in U.S.A. Copyright, 1953, by Popular Science Publishing Co., Inc. All rights reserved in the United States, Great Britain, and in all countries participating in the International Copyright Convention and Pan-American Copyright Convention. Yearly subscriptions to United States, its possessions and Canada, $3.00 (2 years, $5.50; 3 years $7.50); foreign countries $1 per year extra. Four weeks' notice is needed to change a subscriber's address. Please give both old and new addresses, including postal zone numbers.

Are You "STUCK" In Your Present Job?

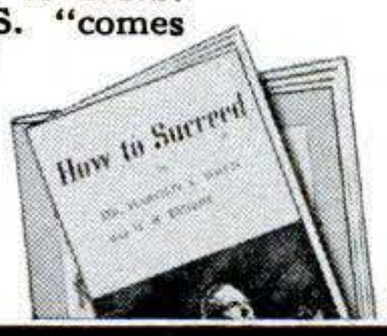
How long since you had a raise? A good promotion? Are you really "going places"—or just marking time? Here's what thousands are doing about this problem:

IS THIS WHAT HAS HAPPENED TO YOU?

At first you were doing fine. Then one day (perhaps recently) you realized that you've "bogged down." You're no longer making headway toward the kind of job and income that you REALLY want.

1973 Promotions in One 120-Day Period!

Facing such problems, nearly six million people have turned to I.C.S. And year after year I.C.S. "comes through" for those who turn to it for help. For example, a recent Survey showed that, *in one single 120-day period,* 1973 I.C.S. students were promoted to better jobs!



You don't have to quit your job to get the training you need in order to get ahead faster—in your present field or in a new one. And the cost to you is ONLY A FEW CENTS A DAY—and a fraction of the home spare-time which may *now* be getting you nowhere! You have your choice of 391 courses; and you get the personal help of one or more of our 203 expert instructors.

FREE—2 INTERESTING BOOKS

Mail coupon for Free Book about subject you're interested in. Also, free, *"How to Succeed"* — 36-page goldmine of advice on Why People Fail, How to Pick Your Goal, How to Develop Hidden Talents, etc. Take advantage of today's new job opportunities. Mail coupon, without obligation, NOW.

Changes Jobs Twice for Higher Pay

"Took Accountancy Course. Obtained two other jobs — each paying better than the previous. Would have been impossible without I.C.S. training." — *W. K. Watson, Lakewood 7, Ohio.*

Farm Laborer to Senior Chemist

"When I enrolled for Analytical Chemistry, I was a farm laborer. Continued with Advanced Organic, and Physical, Chemistry. This enabled me to advance to Senior Research Chemist.—*Dr. S. Carl Traegde, Los Angeles, Cal.*

"I'm $100 a Month Richer"

"Got present job on strength of I.C.S. training. As result, I'm $100 a month richer." — *H. A. Howell, Big Spring, Tex.*

INTERNATIONAL CORRESPONDENCE SCHOOLS

ICS

BOX 7627-N, SCRANTON 9, PENNA.

Without cost or obligation, send me "HOW to SUCCEED" and the booklet about the course BEFORE which I have marked X:

ART
- ☐ Commercial Art
- ☐ Magazine and Book Illustrating
- ☐ Cartooning
- ☐ Show Card and Sign Lettering
- ☐ Fashion Illustrating

AUTOMOTIVE
- ☐ Automobile, Mechanic
- ☐ Auto-Elec. Technician
- ☐ Auto Body Rebuilding and Refinishing
- ☐ Diesel—Gas Engines

AVIATION
- ☐ Aeronautical Engineering Jr.
- ☐ Aircraft Engine Mechanic
- ☐ Airplane Drafting

BUILDING
- ☐ Architecture
- ☐ Arch. Drafting
- ☐ Building Contractor
- ☐ Estimating
- ☐ Carpenter and Mill Work
- ☐ Carpenter Foreman
- ☐ Reading Blueprints
- ☐ House Planning
- ☐ Plumbing
- ☐ Heating
- ☐ Steam Fitting
- ☐ Air Conditioning
- ☐ Electrician

BUSINESS
- ☐ Business Administration
- ☐ Certified Public Accountant
- ☐ Accounting
- ☐ Bookkeeping
- ☐ Stenography and Typing
- ☐ Secretarial
- ☐ Federal Tax
- ☐ Business Correspondence
- ☐ Personnel and Labor Relations
- ☐ Advertising
- ☐ Retail Business Management
- ☐ Managing Small Business
- ☐ Sales Management
- ☐ Salesmanship
- ☐ Traffic Management

CHEMISTRY
- ☐ Chemical Engineering
- ☐ Chemistry
- ☐ Analytical Chemistry
- ☐ Petroleum—Nat'l Gas
- ☐ Pulp and Paper Making
- ☐ Plastics

CIVIL, STRUCTURAL ENGINEERING
- ☐ Civil Engineering
- ☐ Structural Engineering
- ☐ Surveying and Mapping
- ☐ Structural Drafting
- ☐ Highway Engineering
- ☐ Reading Blueprints
- ☐ Concrete Construction
- ☐ Sanitary Engineering

DRAFTING
- ☐ Aircraft Drafting
- ☐ Architectural Drafting
- ☐ Electrical Drafting
- ☐ Mechanical Drafting
- ☐ Structural Drafting
- ☐ Sheet Metal Drafting
- ☐ Mine Surveying and Drafting

ELECTRICAL
- ☐ Electrical Engineering
- ☐ Electrician
- ☐ Electrical Maintenance
- ☐ Electrical Drafting
- ☐ Electric Power and Light
- ☐ Lineman

HIGH SCHOOL
- ☐ High School Subjects
- ☐ College Preparatory
- ☐ Mathematics
- ☐ Commercial
- ☐ Good English

MECHANICAL AND SHOP
- ☐ Mechanical Engineering
- ☐ Industrial Engineering
- ☐ Industrial Supervision
- ☐ Foremanship
- ☐ Mechanical Drafting
- ☐ Machine Design-Drafting
- ☐ Machine Shop Practice
- ☐ Tool Design
- ☐ Industrial Instrumentation
- ☐ Machine Shop Inspection
- ☐ Reading Blueprints
- ☐ Toolmaking
- ☐ Gas—Electric Welding
- ☐ Heat Treatment—Metallurgy
- ☐ Sheet Metal Work
- ☐ Sheet Metal Pattern Drafting
- ☐ Refrigeration

POWER
- ☐ Combustion Engineering
- ☐ Diesel—Electric
- ☐ Electric Light and Power
- ☐ Stationary Steam Engineering
- ☐ Stationary Fireman

RADIO, TELEVISION, COMMUNICATIONS
- ☐ General Radio
- ☐ Radio Operation
- ☐ Radio Servicing—FM
- ☐ Television
- ☐ Electronics
- ☐ Telephone Work

RAILROAD
- ☐ Locomotive Engineer
- ☐ Diesel Locomotive
- ☐ Air Brakes ☐ Car Inspector
- ☐ Railroad Administration

TEXTILE
- ☐ Textile Engineering
- ☐ Cotton Manufacture
- ☐ Rayon Manufacture
- ☐ Woolen Manufacture
- ☐ Loom Fixing
- ☐ Finishing and Dyeing
- ☐ Textile Designing

HOME ARTS
- ☐ Dressmaking and Designing
- ☐ Cookery
- ☐ Tea Room Management

Name_____ Age_____ Home Address_____

City_____ State_____ Working Hours_____ A.M. to_____ P.M.

Occupation_____

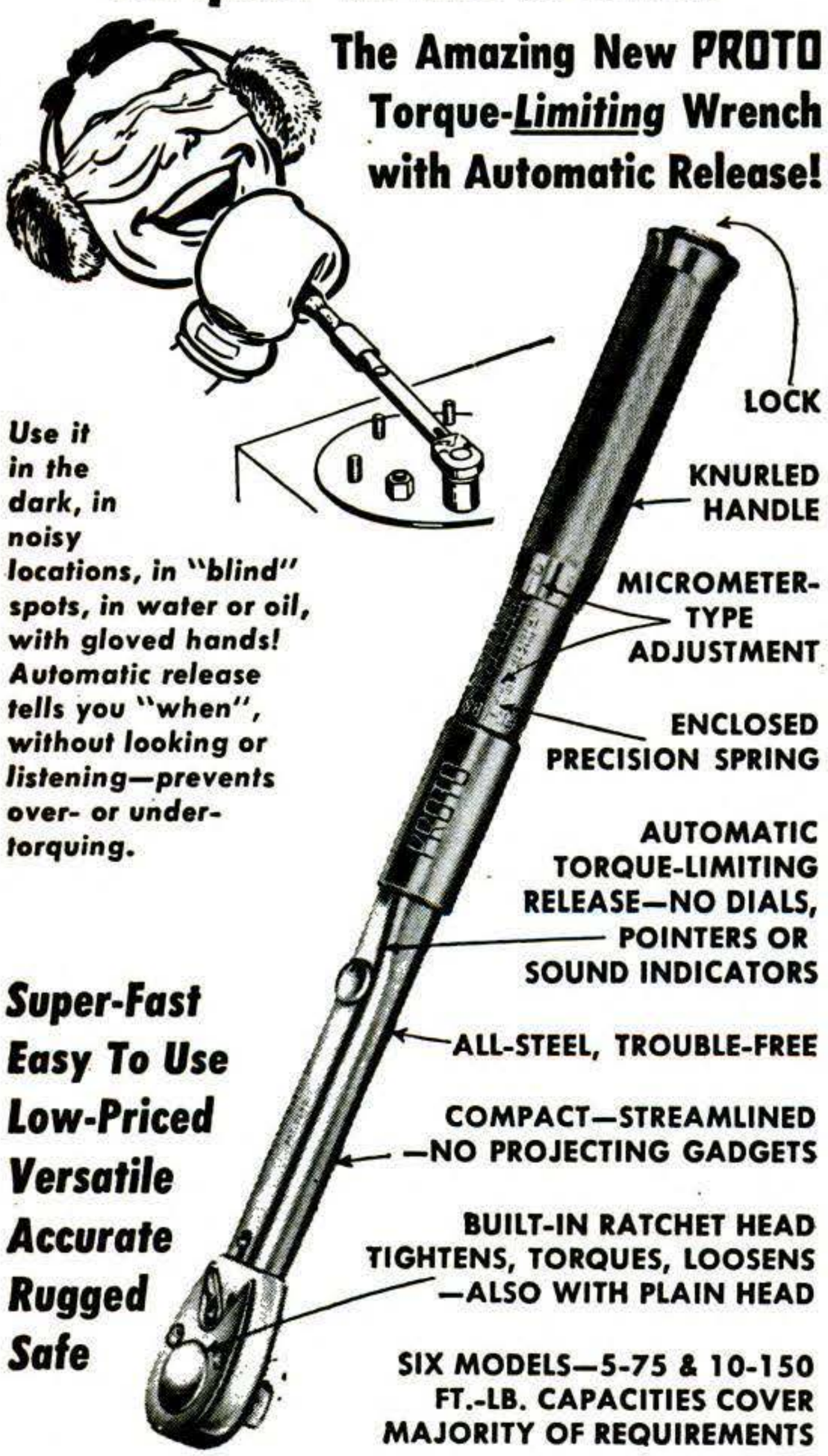
Special tuition rates to members of the Armed Forces. Canadian residents send coupon to International Correspondence Schools Canadian, Ltd., Montreal, Canada.

Copyrighted material

Fastest

Torquer in the World!!

The Amazing New PROTO Torque-*Limiting* Wrench with Automatic Release!



Use it in the dark, in noisy locations, in "blind" spots, in water or oil, with gloved hands! Automatic release tells you "when", without looking or listening—prevents over- or under-torquing.

Super-Fast
Easy To Use
Low-Priced
Versatile
Accurate
Rugged
Safe

Remember! PROTO means PROfessional TOols

Vastly superior to old-fashioned *indicating* types, the new PROTO torque-*limiting* wrench quickly pays for itself by doing work better and faster! See and buy it at your nearest PROTO dealer. Send for free details (enclose 10¢ for 68-page catalog of *complete* PROTO line) to:

PLOMB TOOL COMPANY
2257X Santa Fe Ave., Los Angeles 54, Calif.

5381

PROTO TOOLS Professional Quality
REG. U.S. PAT. OFF. MADE IN U.S.A. LOS ANGELES PROTO means PROfessional TOols

Eastern Factory—Jamestown, N.Y.
Canadian Factory—London, Ont.

News and Pictures

Here's How the World Looks to a Fish....111
Spacemen Come Down to Earth.....113
How an Electric-Eye Door Works.....138
Science Goes Fishing Through the Ice....140
I Hitched a Ride with the Champ.....143
His Bike Runs on Firewood.....148
'Copter Cabs are Coming.....171
Auto Factory Almost Runs Itself.....174

Mechanics and Homebuilding

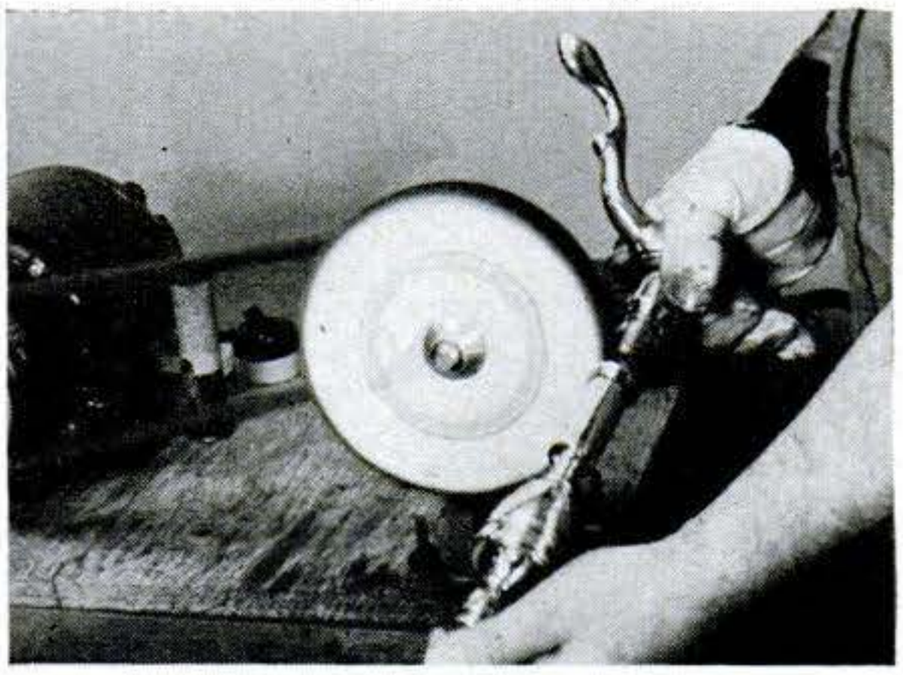
What to Do When Home Freezer Quits..185
Making Driving Safer.....195
One-Evening Shop Projects.....210
Paper Flying Wing Gives Flight Lessons..214
Treasure Chest Stores Records.....216
New for the Handy Man.....218
Overhead Motor Drives Milling Spindle..227
Foot-Powered Tire Pump Sprays Paint....234
How to Wash Your TV Picture Tube.....238
Face-Lifting with Plastic Veneer.....240

Departments

Letters 24
New Aids to Living.....136
I'd Like to See Them Make.....146
New Ideas from the Inventors.....157
P.S. Last Minute News and Notes.....178
Hints from the Model Garage.....199
Keeping the Home Shipshape.....212
Craftsmen at Work.....226
New Shop Ideas.....228
New Tools 236

NEXT MONTH . . .

How to Buff



Who wants to spend time daubing metal polish when he can let a quarter-horse motor work for him? Certainly not writer Bill Vogel, whose enthusiasm for power buffing shines as brightly as the work he turns out. If the brass and copper around your home are a little winter-weary, read the low-down next month on the easy way to a gleaming polish.

Copyrighted material

NEW WONDER LUBRICANT

used in jet engine and atomic energy plants . . . now available for your car

AUTOMOTIVE

LIQUI-MOLY

Plates engine parts for 3,000 miles

LIQUI-MOLY is the new plating process that permanently coats engine parts with the most slippery metal known: Molybdenum (MoS_2). This is the new wonder lubricant used in jet engine and atomic energy plants. Add it to your regular motor oil; the action of your motor does the rest.

Drastically reduces engine friction

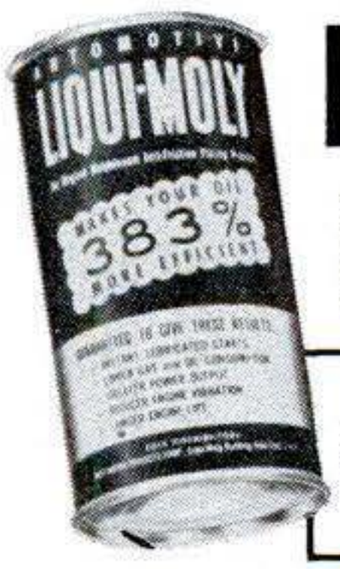
The LIQUI-MOLY plating cannot be squeezed out or thrown off engine parts like oil. It *stays on* cylinder walls, piston rings, valves and bearings, giving instant lubrication when you press the starter.

Instead of metal grinding against metal, engine parts slide smoothly on millions of microscopic moly "ball bearings." Friction is drastically reduced, resulting in lower gas and oil consumption, greater power output and smoother performance.

LIQUI-MOLY GIVES YOU:

- **Reduced consumption of gas and oil**
- **Instant, lubricated starts on cold days**
- **Safe break-in of new engines at high speeds**
- **Protection if oil or water is accidentally lost**
- **Greater power output—longer engine life**

NATIONAL BUREAU OF STANDARDS, *Journal of Research, April 1951 — 292:* Static Friction Tests with Special Lubricants: "The lubricants containing MoS_2 gave the lowest friction . . . about 50% to 60% less than reference oil (Navy 210 Oil, S.A.E. 10)."



AUTOMOTIVE

LIQUI-MOLY

The original A. J. Lockrey Molybdenum (MoS_2) anti-friction plating process. Perfected in 1949 and proved in over 1,000,000 automobiles. Beware of inferior imitations with similar-sounding names.

$1.50 One-treatment size for passenger cars in sealed 10½ oz. tamper-proof can.

32 oz. economy size. **$3.75.**

TO DISTRIBUTORS & DEALERS

If you are interested in an exclusive franchise distributorship (some areas are available) or if you wish to sell LIQUI-MOLY to your customers, write for full information. Moly Motor Products Corp., 1155 Broadway, N. Y. 1, N. Y. Exclusive International Distributors of AUTOMOTIVE LIQUI-MOLY.

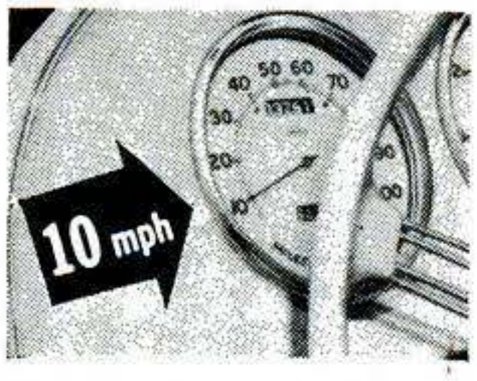
VARIOUS GRADES OF LIQUI-MOLY ARE USED REGULARLY ON TOUGH LUBRICATION JOBS BY:

U. S. Air Force • General Electric
Atomic Energy Commission • U. S. Steel
Ford Motor Company • Westinghouse Electric
Union Carbide & Carbon • E. I. DuPont de Nemours

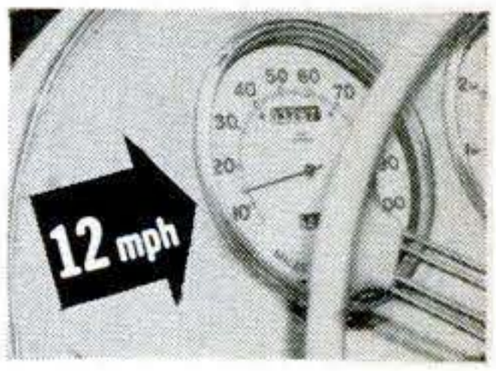
PHOTOS OF TEST BY "SPEED AGE" MAGAZINE

(in the January, 1952 issue)

Reporting a 20% increase in gas mileage



BEFORE LIQUI-MOLY. With one rear wheel jacked up, car was put in high gear and *throttle pre-set at a given point.* After ten-minute warm-up speedometer registered ten m.p.h.



AFTER LIQUI-MOLY. At this point, LIQUI-MOLY was poured into crankcase. 30 minutes later, the speedometer read 12 m.p.h., on the same throttle setting—an increase of 20%!

ONE TREATMENT LASTS 3,000 MILES

Available at gas stations, accessory stores & car dealers.

MAIL ORDERS ACCEPTED

IF LIQUI-MOLY IS NOT AVAILABLE AT YOUR DEALER

MONEY-BACK GUARANTEE

NO RISK TO YOU: If LIQUI-MOLY *does not improve your car's performance, return the empty can for full refund.*

MOLY MOTOR PRODUCTS CORP.
1155 Broadway, New York 1, N. Y.

Please send me:

_____ cans $1.50 size LIQUI-MOLY $_____

_____ cans $3.75 size LIQUI-MOLY $_____

Add 15¢ for postage and handling $ .15

TOTAL $_____

NAME_____
PLEASE PRINT

ADDRESS_____

CITY_____ ZONE____ STATE_____

(Send cash, check or money order) PS1

Copyrighted material

New "500" telephone. It has already been introduced on a limited scale and will be put in use as opportunity permits, in places where it can serve best. Note new dial and 25 per cent lighter handset.

It adds miles to your voice

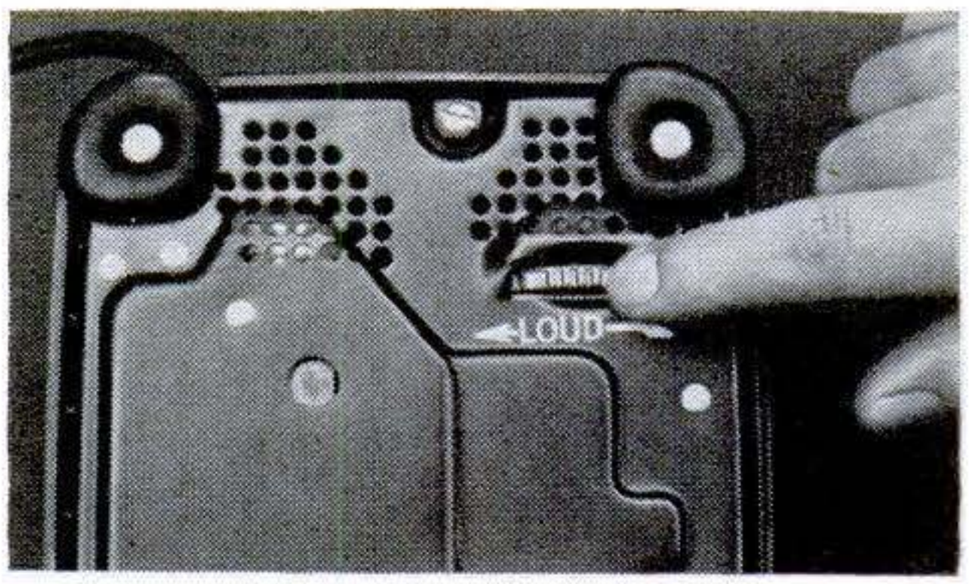
For years the telephone you know and use has done its job well—and still does. But as America grows, more people are settling in suburban areas. Telephone lines must be longer; more voice energy is needed to span the extra miles.

Bell Telephone Laboratories developed a new telephone which can deliver a voice ten times more powerfully. Outlying points may now be served without the installation of extra-heavy wires or special batteries on subscribers' premises. For shorter distances, the job can be done with thinner wires than before. Thus thousands of tons of copper and other strategic materials are being conserved.

The new telephone shows once again how Bell Telephone Laboratories keeps making telephony better while the cost stays low.

BELL TELEPHONE LABORATORIES

Improving telephone service for America provides careers for creative men in scientific and technical fields.



Adjustable volume control on bottom of new telephone permits subscriber to set it to ring as loudly or softly as he pleases. Ring is pleasant and harmonious, yet stands out clearer.

QUICK FACTS ON NEW TELEPHONE

Transmitter is much more powerful, due largely to increased sound pressure at the diaphragm and more efficient use of the carbon granules that turn sound waves into electrical impulses.

Light ring armature diaphragm receiver produces three times as much acoustic energy for the same input power. It transmits more of the high frequencies.

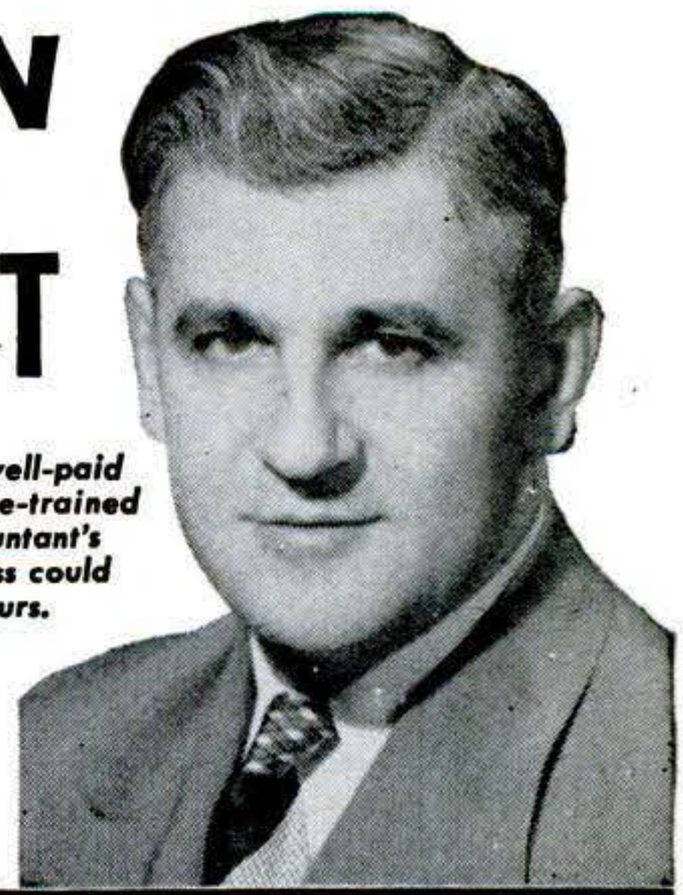
Improved dial mechanism can send pulses over greater distances to operate switches in dial exchange.

Built-in varistors equalize current, so voices don't get too loud close to telephone offices.

Despite increased sensitivity of receiver, "clicks" are subdued by copper oxide varistor which chops off peaks of current surges.

Copyrighted material

This *FREE SAMPLE LESSON* will prove you can become an expert BOOKKEEPER . . . ACCOUNTANT OR C.P.A.



This well-paid LaSalle-trained Accountant's success could be yours.

FREE SAMPLE LESSON

We offer you this free sample lesson so that you can *prove to yourself* that you CAN master Accountancy—quickly, thoroughly—in spare time at home.

You will see exactly how LaSalle's famous "Problem Method" works . . . how you are led step-by-step through actual accounting work—*learning by doing* and not by study of theory alone. First you tackle easy problems, then more difficult ones—until soon you master them all. And at every step you have the close personal guidance of LaSalle's large staff of C.P.A. instructors.

HIGHER ACCOUNTANCY

By the LaSalle Problem Method..

• Practical Accounting

Assignment 1

THE BALANCE SHEET

QUOTING from the "*Journal of Accountancy*," the authoritative organ of the professional accountants of the United States:

"*** the accounting profession is probably the best paid in the world. If there be a profession in which the average compensation is higher, it is not known to us.

"There is need for accountants. There is ample compensation for accountants. There is no prospect that the supply will overtake the demand within the lifetime of even the youngest of us."

LaSalle Extension University
A Correspondence Institution
CHICAGO

THIS SAME LESSON HAS STARTED HUNDREDS OF THOUSANDS toward well-paid accounting careers—in business, government, and as C.P.A.'s. Even without previous knowledge, progress is rapid—earning power climbs fast. This sample lesson shows why.

IF you have been envying the high incomes and good jobs enjoyed by thousands of men and women Accountants today . . . incomes ranging from $4,000 to $10,000 and more per year . . . why not launch such a career for yourself?

Do you doubt that you can?

Then let us send you—without cost or obligation—the same Lesson Number One with which LaSalle has started several hundred thousand men and women toward successful accounting careers. We want you to see for yourself how this remarkable method, originated by LaSalle, makes Accountancy simple, interesting, practical, and certain . . . how it leads you step-by-step to a complete mastery of Accounting—and on up to the coveted degree of Certified Public Accountant if you so aspire.

It doesn't matter whether you've had previous bookkeeping experience, or whether you don't know a debit from a credit. Whether you wish to qualify as an expert bookkeeper, advanced accountant, cost accountant, auditor, government accountant, income tax specialist, or public accountant . . . you'll find in LaSalle's Problem Method the exact plan to prepare you rapidly and inexpensively—in spare hours at home—without losing a day from your present job.

So right now, today . . . if you are an adult, employed, and earnestly ambitious for rapid advancement in this highest-paying of all professions . . . send your name and address on the coupon below. We'll send the free sample lesson—plus our 48-page book outlining today's career opportunities and how you can qualify for them. A coupon like this has started many thousands toward greater success. It can do the same for you. Mail it today!

Nearly 10% of all C.P.A.'s in the U.S. have been trained by the LaSalle Problem Method

GOOD-PAY JOBS IN 5 BIG FIELDS

If you were an expert accountant right now, chances are you would find yourself among the highest-paid of all professional men and women. Surveys show that accountants earn more than those in other major professions.

There are five big fields of opportunity open to Accountancy-trained men and women . . . opportunities that are wide open and highly inviting, offering maximum income and job security in good times or bad. And under LaSalle's "Problem Method" you can start earning while still learning—either in spare-time or full-time employment . . . or in business for yourself with no capital required.

Get the latest information by sending for our 48-page book, "Accountancy, the Profession That Pays" . . . plus free sample lesson. The coupon at right will bring both to you without cost or obligation. LaSalle Extension, 417 S. Dearborn St., Chicago 5, Ill.

Clip Coupon . . . Mail TODAY!

LaSalle Extension University . . . *A Correspondence Institution*
Dept. 283-H, 417 S. Dearborn Street, Chicago 5, Illinois

YES, I want to see how LaSalle's "Problem Method" works.. how I can qualify for high-pay Accountancy positions. Send Free Sample Lesson — also your 48-page book, "Accountancy, the Profession That Pays" ...all without cost or obligation.

Name. . . . . *Age*. . . . . .

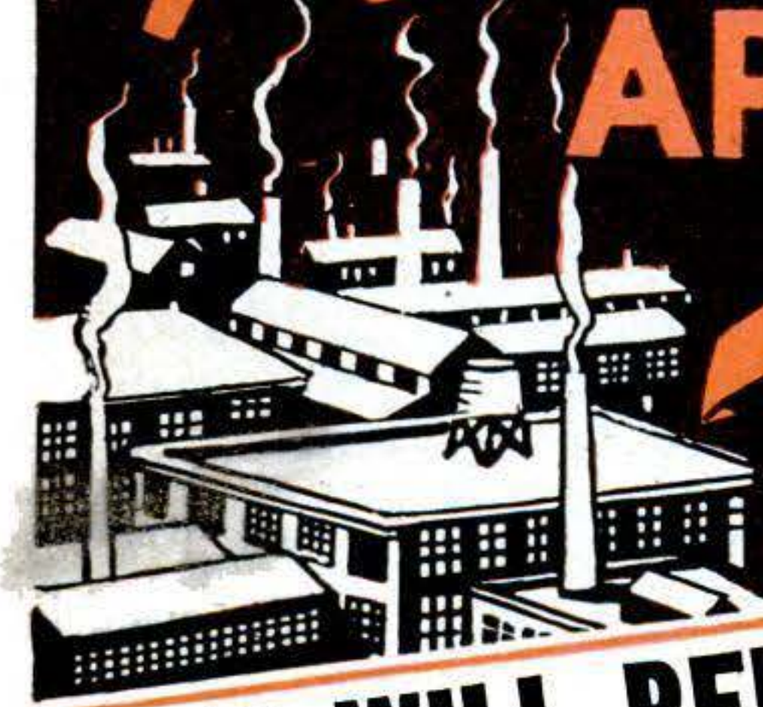
Street Address. . . . . .

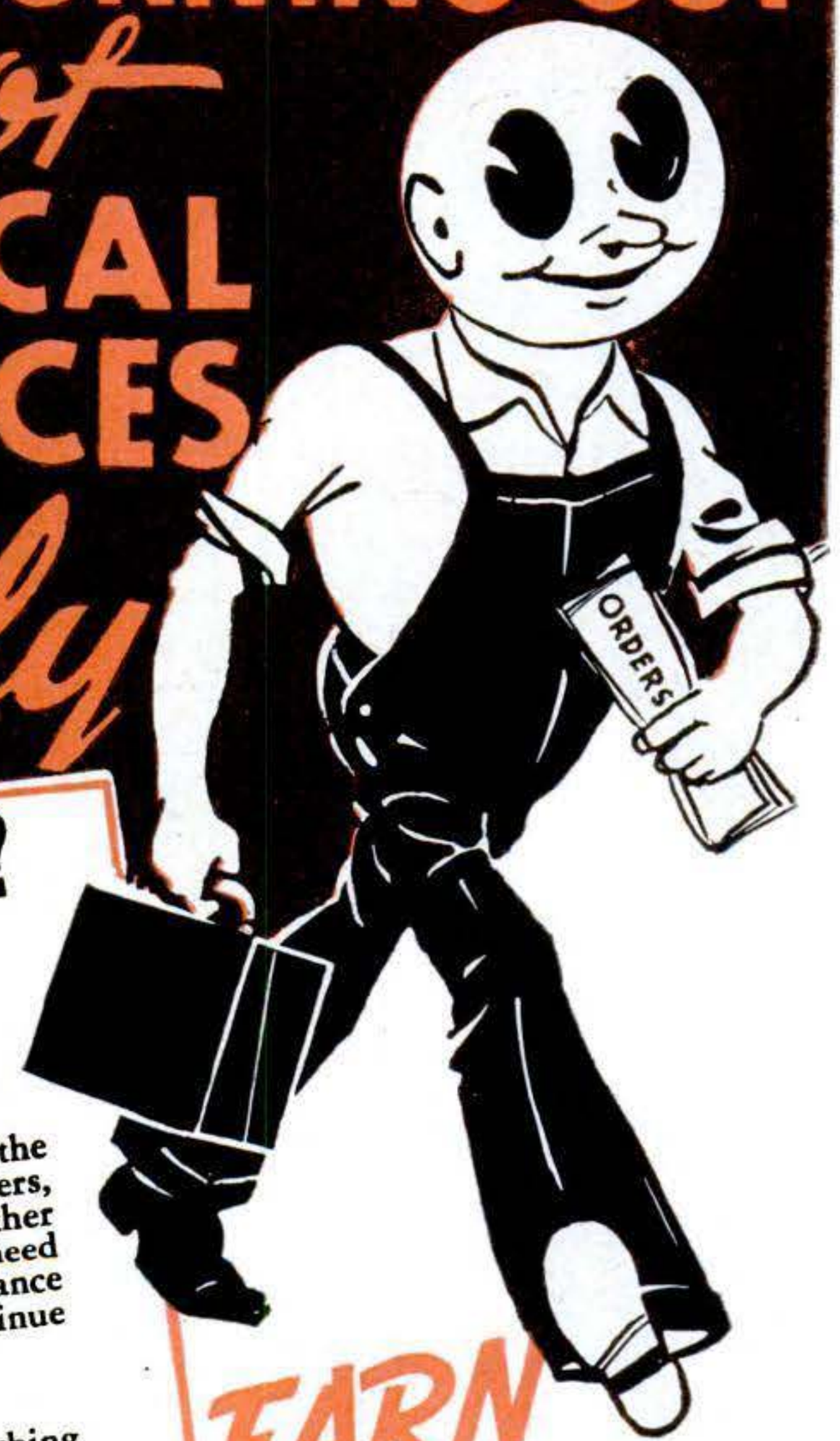
City, Zone & State. . . . . .

Present Position. . . . . .

Copyrighted material

FACTORIES ARE TURNING OUT *Millions of* ELECTRICAL APPLIANCES *Daily*





WHO WILL REPAIR THEM?

There are over 45,000,000 families in the United States. They average 12, 15 or more electrical appliances. Every marriage increases the need just that many more. Lamps, Refrigerators, Washing Machines, Irons, Toasters, Percolators, Radios, Vacuum Cleaners, etc. Billions of dollars are already invested in electrical appliances in cities, on farms, and in factories. Each year more and more electrical inventions appear on the market. Television sets, electric blankets, automatic dryers, humidifying cleaners are a few recent ones and everyone either has or wants to buy one or all of them. Eventually they need either adjustment or repair—that is why Electrical Appliance Repairing is such a profitable business today and will continue to pay big cash profits for years to come.

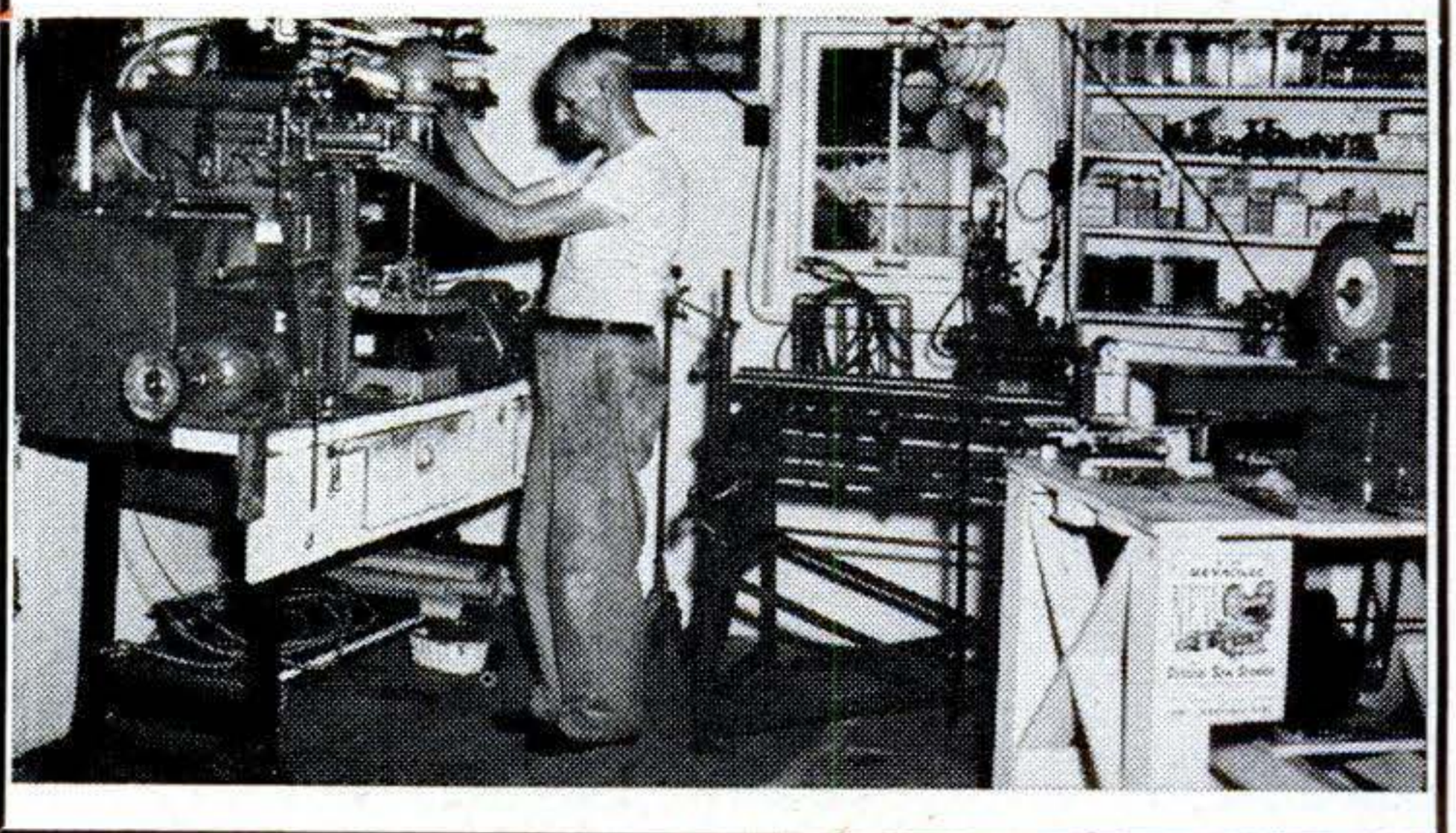
HOW CTS TEACHES YOU

Since 1935 the CHRISTY TRADES SCHOOL has been teaching mechanically inclined men the world over the profitable ELECTRICAL EQUIPMENT SERVICING business for home and factory. You learn by working with your hands, building, testing, repairing. We send you kits to assemble and keep including the valuable CHRISTY ELECTRONIC KIT, the portable trouble tracer.

IF YOU ARE MECHANICALLY INCLINED

Can hold and use tools, CTS will give you the training and time saving kits that will enable you to own either your own full or spare time money making business.

EARN WHILE YOU LEARN TO REPAIR THEM!



READ WHAT MR. PIPPIN SAYS: . . .

Mr. Marion A. Pippin, 1139 E. Lincoln Ave., Decatur, Ill., before enrolling with CTS wrote, "I have been a foreman in a large plant here for 39 years and now retired. My age (60 years old) is against me." Then he enrolled and reported, "I certainly have enjoyed your training. The way your lessons are prepared is very fine." Then he graduated and wrote, "Well, I am now in the phone book in 4 places in the yellow pages. My business is getting better all the time." Mr. Pippin, now 61 years old and a grandfather five times, has found a business with Real Security in his Fix-It Shop. You can do the same.

Copyrighted material

START YOUR OWN BUSINESS!

ELECTRICAL APPLIANCE REPAIRING

IN YOUR OWN KITCHEN, BASEMENT OR GARAGE

You don't need elaborate fixtures or expensive equipment to be a successful repairman.

$5.00—$6.00 AN HOUR

often charged for making ordinary repairs. We show you how to repair refrigerators, vacuum cleaners, washing machines, motors, etc., etc.

AGE IS NO BARRIER

nor is a minor physical handicap. Work is light, pleasant and PROFITABLE. Work as many hours as you wish. The Electrical Appliance Technician is his own boss!

MAKE MONEY RIGHT FROM THE START

Many of our students pay for their entire course before they have completed their training! How? Because right from the very beginning they are shown how to make actual repairs! Thousands of Electrical Service Technicians can testify that the CTS course is a *practical course* written in simple, easy-to-understand language, profusely illustrated with hundreds of photographs and detailed drawings.

CTS SHOWS YOU

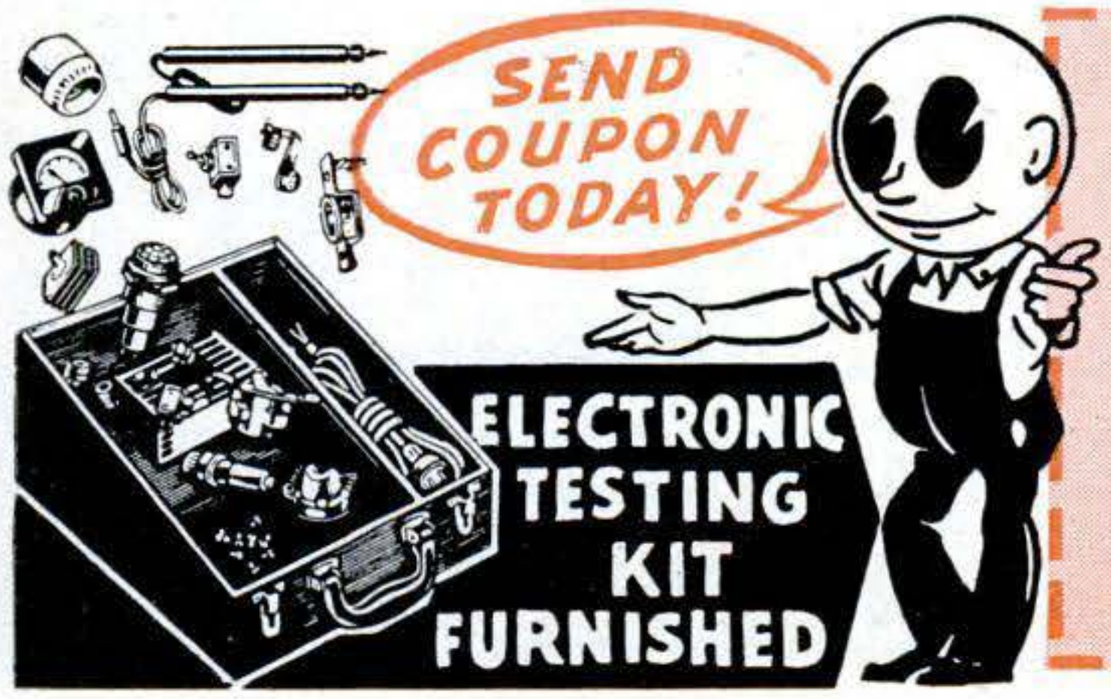
how to locate any trouble with refrigerators, vacuum cleaners, irons, toasters, motors, in fact, anything electrical . . . then how to quickly fix it . . . and what to charge. CTS also shows you how to solicit business, where to get repair parts wholesale (over 270 supply sources listed). ALSO, how to build power tools you want from spare parts and CTS teaches you Welding, House Wiring, Nickel Plating, Saw, Scissor and Lawn Mower Sharpening, Bicycle Repairing and other profitable sideline or full time businesses.

PAY AS YOU LEARN PLAN

Send TODAY for FREE Illustrated Book and Special Form for paying from earnings made while learning.

SEND FOR FREE BOOK!

TELLS YOU HOW TO DO IT!



CHRISTY TRADES SCHOOL
Dept. D-2401, 4432 N. Kedzie, Chicago 25, Ill.

Gentlemen: Please rush me FREE book on America's fastest growing industry, Electrical Appliance Servicing, and special form for paying later.

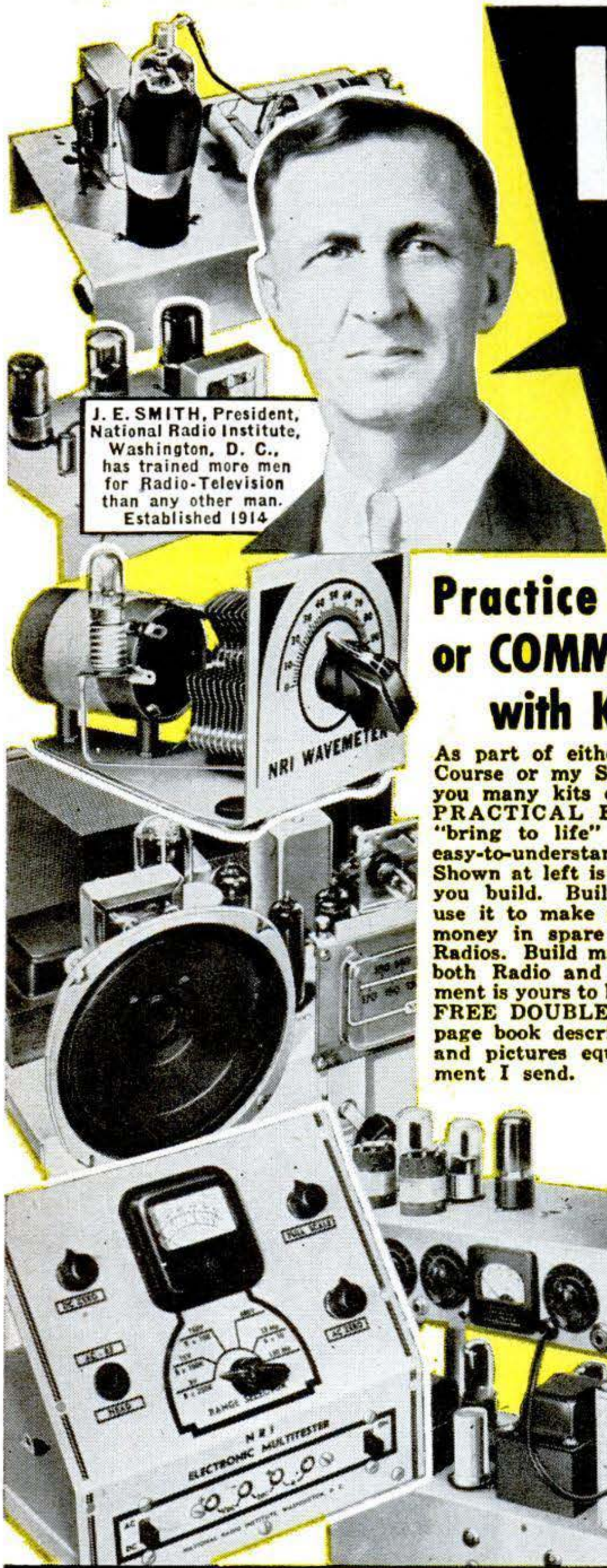
NAME.....AGE.....

ADDRESS.....

CITY.....STATE.....

Copyrighted material

I'll Train You RADIO-



J. E. SMITH, President, National Radio Institute, Washington, D. C., has trained more men for Radio-Television than any other man. Established 1914

Practice SERVICING or COMMUNICATIONS with Kits I Send

As part of either my Communications Course or my Servicing Course I send you many kits of parts that give you PRACTICAL EXPERIENCE. They "bring to life" the principles in my easy-to-understand, illustrated lessons. Shown at left is some of the equipment you build. Build valuable Multitester, use it to make many tests, earn extra money in spare time fixing neighbors' Radios. Build many circuits common to both Radio and Television. All equipment is yours to keep. Mail coupon for my FREE DOUBLE OFFER! My free 64-page book describes and pictures equipment I send.

Television Is Today's Good Job Maker

In 1951 over 15,000,000 homes had Television sets, more are being sold every day. Television now reaches from coast to coast. 108 TV stations are already operating, over 1800 more have been authorized. This means new jobs, more jobs, better pay for trained men. The time to act is NOW! Start learning Radio-Television servicing or communications.

Make Extra Money in Spare Time While Learning

Keep your job while training. Many NRI students make $5, $10 and more a week extra fixing neighbors' Radios in spare time. I start sending you special booklets that show you how to service sets the day you enroll. Multitester you build helps discover and correct Radio troubles, gives PRACTICAL EXPERIENCE on circuits common to Radio and TV.

I Trained these Men at Home

Laborer Finds Success in Radio-TV

"I was a laborer with no future. Now I have a position that pays well. My spare time servicing pays good money, too. Thanks to NRI."—Robert Ford, Johnstown, Pa.

Switched to TV Servicing

"I recently switched from studio work and am now holding a position as TV service technician. Enjoy my work more and more." — Norman Ward, Ridgefield Park, N. J.

Paid for Course, Car in Spare Time

"By the time I graduated I had paid for my course, a car and testing equipment. I can handle any job in Radio-TV."—E. J. Streitenberger, New Boston, Ohio.

$10 to $15 Week Spare Time

"Four months after enrolling, was able to service Radios . . . averaged $10 to $15 a week spare time. Now have full time business." — W. Weyde, Brooklyn, N. Y.

Employed as Transmitter Operator

"A former employer recommended NRI training to me. Now employed as transmitter operator in Harrisburg."—Albert Herr, New Cumberland, Penna.

Copyrighted material

AT HOME for Good Jobs in TELEVISION

There is Success-Good Pay-Security for You in America's Fast Growing Industry

NRI Training Leads to These Jobs in RADIO-TELEVISION

BROADCASTING
Chief Technician
Chief Operator
Power Monitor
Recording Operator

SERVICING
Home and Auto Radios
Television Receivers
P.A. Systems

MANUFACTURING
Design Technician
Service Manager
Tester
Research Assistant

SHIP AND HARBOR RADIO
Chief Operator
Radiotelephone Operator
Assistant Operator

GOVERNMENT RADIO
Operator in Army, Navy, Marine Corps
Airways Operator
Forestry Dispatcher

AVIATION RADIO
Transmitter Technician
Airport Transmitter Operator

TELEVISION
Pick-up Operator
Television Technician
Remote Control Operator
Service and Maintenance Technician

POLICE RADIO
Transmitter Operator
Receiver Serviceman

Control Operator, Station WEAN

"Received my License and worked on ships. Now with Station WEAN. NRI Course is as complete as any radio course can be." —Raymond E. Arnold, Rumford, L. I.

Lost Job, Now Has Own Shop

"Got laid off my machine shop job which was best thing that ever happened to me as I opened a full time RADIO shop." —Ernest T. Slate Corsicana, Texas.

DO YOU want good pay, a job with a bright future, security? Would you like to have a profitable business of your own? If so, find out how you can realize your ambition in the fast-growing RADIO-TELEVISION industry. Even without Television, the industry is bigger than ever before. 105 million home and auto radios, 2900 Radio Broadcasting Stations, 108 TV Stations with 1800 more now authorized. Expanding use of Aviation and Police Radio, Micro-Wave Relay, Two Way Radio for buses, taxis, etc., are making opportunities for Servicing and Communications technicians and FCC Licensed Operators.

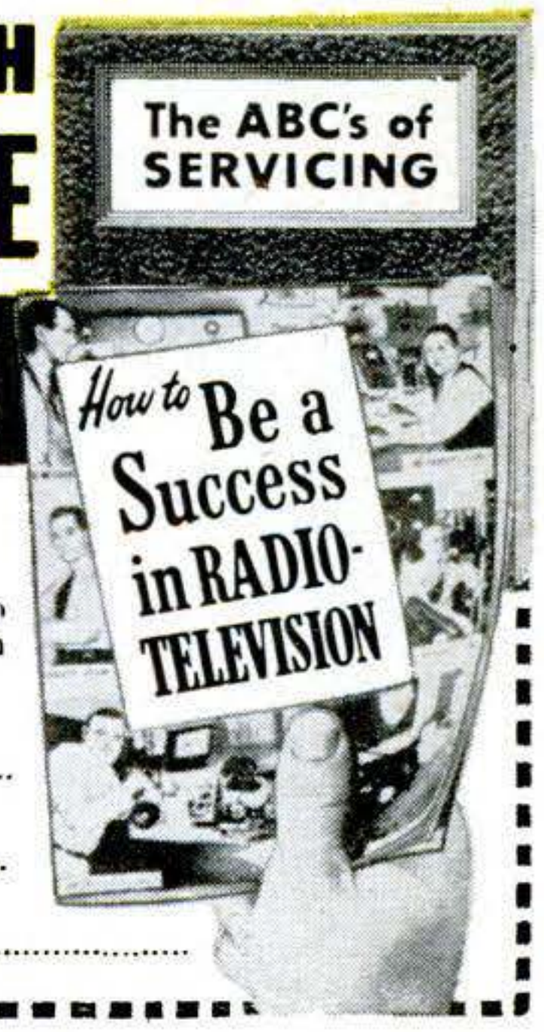
My Training Includes Television

You get practical experience by working on circuits common to both Radio and Television. My graduates are filling jobs, making good money in both Radio and Television. Many NRI trained men start their own Radio and Television servicing business with capital earned in spare time. Let me show you how you can be your own boss; earn $5, $10 a week extra even while still learning. Now is the time to get ready for success in TV. Mail coupon now.

Find Out What Radio-Television Offers You

What will YOU be doing one year from today? Decide now that you are going to know more and earn more. ACT NOW. Send the coupon below NOW for my FREE DOUBLE OFFER. You get Actual Servicing Lesson. Also my 64-page Book, "How to Be a Success in Radio-Television." Read what my graduates are doing, earning, see equipment you practice with at home. Mail coupon now. Send in envelope or paste on postal. J. E. SMITH, President, Dept. 3BB, National Radio Institute, Washington 9, D. C. Our 39th year.

Actual Lesson and 64-page Book BOTH FREE



MAIL THIS NOW!

Mr. J. E. Smith, President, Dept. 3BB,
National Radio Institute, Washington 9, D. C.

Mail me Sample Lesson and 64-page Book, "How to Be a Success in Radio-Television." (No salesman will call. Please write plainly.)

Name.....Age.....

Address.....

City.....Zone.....State.....

Copyrighted material

CAR OWNERS - SAVE UP TO $275.00 A YEAR!

get 37-49 miles PER GALLON FROM ANY CAR

WORLD FAMOUS SPEED CHAMPS & AUTO ENGINEERS TELL HOW:

- TO GO 15,000 MILES WITHOUT OIL CHANGE
- GET 30 M.P.H. MORE TOP CAR SPEED
- GET 10,000 MORE MILES FROM YOUR TIRES

ALL MAKES! ALL MODELS! ALL YEARS!

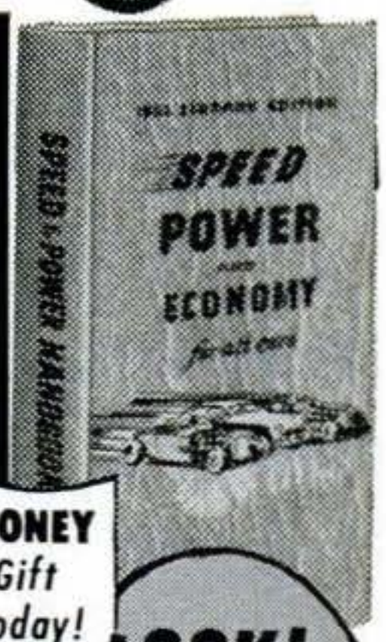
HERE IT IS! THE NEWHOUSE 1953 SPEED, POWER AND ECONOMY MANUAL! The most authentic, complete and **fully illustrated** book of its type ever published is now available to all motorists! See for yourself the quick, easy, step-by-step photo illustrations that reveal the most amazing speed, power and economy secrets of the Century. Learn how to: overhaul your engine in 1 hour . . . get as much as 3-5 more miles per gallon with the twist of a screwdriver . . . restyle your car to get an expensive "sports car" look. Cut engine friction and wear by more than 66% with Auto-Moly—new MOLYBDENUM additive to get high mileage . . . faster starts and increased speed and power! Save **hundreds of dollars** on gas, oil, auto repairs and economy products!

PHOTOS and DIAGRAMS SHOW EASY STEP BY STEP METHODS

This sensational new book with its FOOL-PROOF, easy-to-follow instructions is the same as having the nation's best qualified experts actually show you how! Detailed drawings and cutaway diagrams make every step along the way so simple that anyone can understand—even if you've never held a screwdriver! Learn how to resurface cylinder walls and seal in compression without removing one part from your engine . . . Learn how to automatically flush gum, carbon and other combustion residue out your exhaust pipe . . . Get special methods for obtaining "high test" performance from regular gas . . . This book contains hundreds of money saving hints and "how to do it" instructions such as how to convert a "jalopy" into a sleek "speedster" with push-button windows and doors, custom grillwork, plastic top at only a few dollars total cost.

10 DAY FREE TRIAL AT OUR EXPENSE!

MAIL COUPON TODAY...Special Offer Gives You 4 Books For The Price Of One. Three valuable handbooks described below (Reg. $1.75 value) are yours to keep. If you don't agree that the **SPEED & POWER MANUAL**, the 3 gift handbooks and discount benefits are the best $1.98 value you've ever seen... return Speed & Power Book for full refund, no questions asked.



$1.98

SEND NO MONEY
Mail Free Gift Coupon Today!

THE TRUE STORY ON WHERE YOUR GAS GOES!

At last, the facts are revealed for all to see. Learn how, with the twist of your wrist and with the use of easy-to-get products, you can GREATLY INCREASE THE PRESENT MILEAGE AND POWER OF YOUR CAR. Learn why 80 cents of every gas dollar you spend doesn't move your car one inch. Learn how you can easily and quickly release the shackled horsepower in your engine and stop draining 20% of the power potential out your exhaust . . . dissipating 30% on operation of your ignition, oil and water systems. The Newhouse Book reveals for the first time the **tested proven** methods and techniques that answers the "gas poor" motorists' every problem.

STOP PAYING FOR SUCKER AUTO REPAIRS . . . Learn how to "fix it yourself" and save at least $100 this year alone. Learn how to determine FAIR repair charges as well as do your own work . . . fix your leaky radiator and save $15 . . . "bump out" fender dents and save up to $35 . . . repair a cracked cylinder without removing the engine from your car.

WRITE TODAY!

Mail coupon **now** . . . special offer gives you 4 books for the price of 1 . . . 3 gift handbooks and discount benefits are the best $1.98 value you've ever seen. . . . Return Speed & Power Book for full refund within 10 days, but **Keep** extra GIFT Books!

Newhouse Automotive Industries, Dept. PSB-2, San Gabriel, California

FREE CLUB MEMBERSHIP

GANE ECONOMY CLUB

LOOK! 220 PAGES 500 PHOTOS AND DRAWINGS (combined)

To Book Purchasers

SEND YOUR BOOK ORDER TODAY and receive your Life Membership in the great Gane Economy Club. Enclosed with your books will be your **Free** gas coupons . . . **Free** credit checks . . . **Free** money saving coupons and **Free** trial & premium offers. Other benefits enjoyed by present ½ million members include a **Free** subscription to the Club Newspaper . . . **Free** catalogs showing merchandise which club members can "Buy Without Money." Members have saved many hundreds of dollars through club benefits and privileges.

ORDER YOUR SPEED AND POWER MANUAL TODAY . . . AND RECEIVE YOUR "LIFE MEMBERSHIP CARD" PLUS GIFT & FREE OFFER CERTIFICATES AT ONCE!

WHAT EVERY CAR OWNER SHOULD KNOW!

Complete Information on:

How To—

- Boost horsepower up to 30%.
- Save up to $300 buying or selling a used car.
- Cut gas & oil expense ½.
- Make and install water-vapor injectors systems.
- Convert to automatic transmission.
- Make your own hill holder.
- Get six forward speeds.
- Zoom from 0 to 60 mph in 12 seconds!
- Reduce motor friction by 77%.
- Drive 50,000 miles without changing your *oil filter*.
- Overhaul your engine in one hour.

Also Learn—

- 100 economy secrets
- 10 ways to save on oil
- High-Speed Fuel Formulaes
- Use of Dual ignition systems
- Upholstering techniques
- To build your own supercharger
- Restore compression in 10 minutes
- To convert your car to 150 mph hot rod or sports car
- To get quick cold morning starts
- How to double braking power
- Customizing and restyling any car
- To use overdrive 100% of the time
- To stop carburetor flooding
- Use of jet and airflow needles

Latest Information on Care and Repair of:
Fuel pumps—ignition and electrical systems—starter—battery—generator—tires—brakes—cooling systems—directional signals—transmissions—rear ends—carburetor—bearings—speedometer—steering and many, many more!

SEND NO MONEY! MAIL FREE GIFT Coupon Now!

NEWHOUSE AUTOMOTIVE, Dept. PSB-2
San Gabriel, California

Rush me the Newhouse SPEED, POWER & ECONOMY HANDBOOK for NO RISK EXAMINATION. I agree to pay postman on arrival $1.98 plus postage. If not completely satisfied I will return it within 10 days for a full refund.

Also send me ABSOLUTELY FREE the 3 handbooks: "Economy in Driving," "High Performance Equipment" and the "Famous 'How' Booklet." These I will keep as a FREE GIFT even if I return the big Newhouse Handbook. Also, don't forget to include my Economy Club Membership and FREE gift certificates.

Name.....
(Please print in pencil)

Address.....

City.....Zone....State.....

SAVE MORE! If you send $1.98 with coupon, we pay all postage charges. Same money-back guarantee.

3 BOOKS FREE!

These $1.75 value books are yours to keep even if you return the big Speed & Power Book.

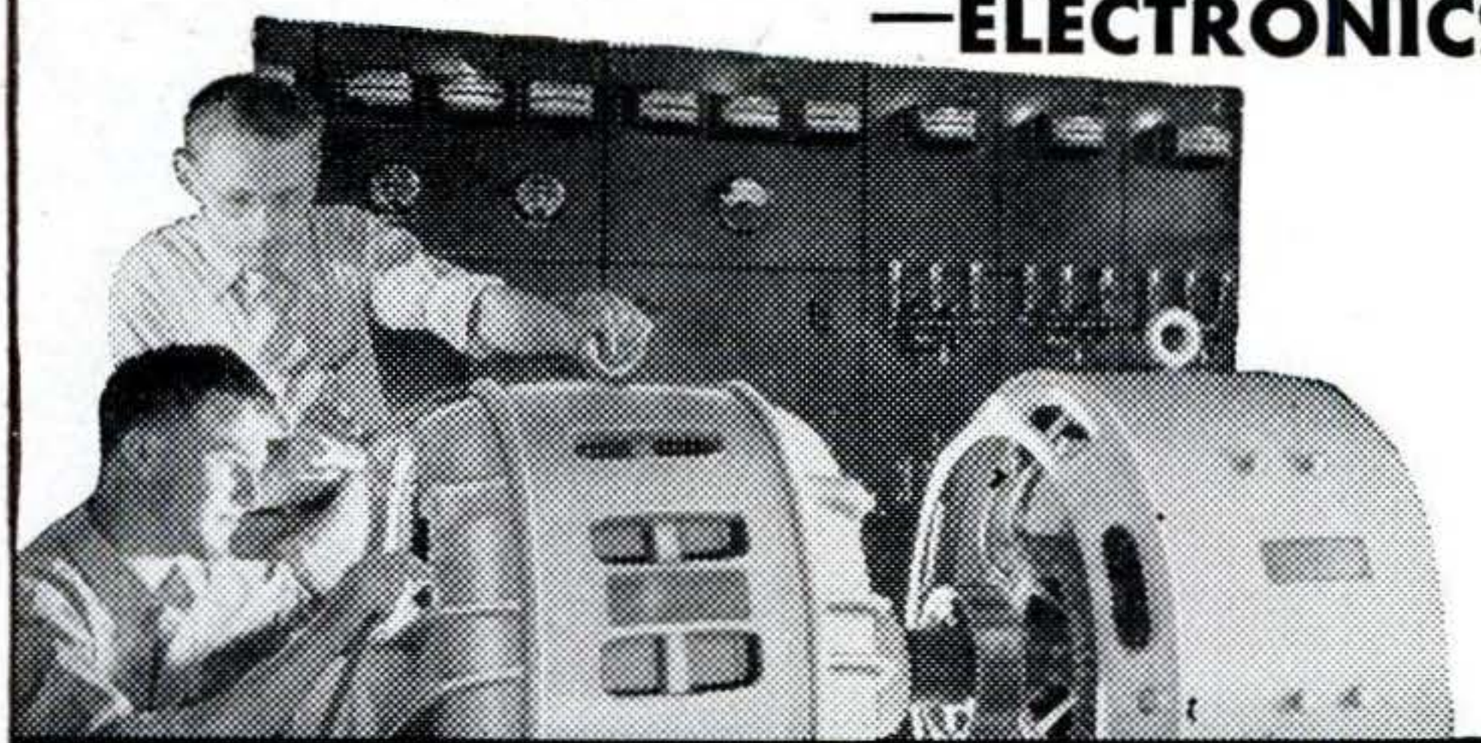
1. ECONOMY DRIVING MANUAL . . . 48 pages of selected economy hints and info. on top auto economy products. (Reg. 50c value.)
2. HIGH PERFORMANCE EQUIPMENT MANUAL . . . pictures & lists 1,000 tested power, speed and economy parts and accessories. (Reg. 25c value.)
3. FAMOUS "How BOOK" . . . reveals for the first time the secret of how some drivers can and do get up to 150 m.p.h. (Reg. $1 value.)

Copyrighted material

THESE MEN ARE GETTING PRACTICAL TRAINING

IN ELECTRICITY —ELECTRONICS

On Real:



A.C. and D.C. MOTORS
GENERATORS
SWITCHBOARDS
CONTROLLERS
WIRING JOBS
APPLIANCES
ELECTRONIC UNITS

(Shown at left—Instructor explaining operation and testing of a large Motor Generator in our A.C. Department.)

AND TELEVISION-RADIO

On Real:

TELEVISION SETS
RADIO RECEIVERS
F.M.
(Frequency Modulation)
ELECTRONICS
RECORD CHANGERS
AUTO RADIOS
PUBLIC ADDRESS Systems

(Right—Instructor helping students check the wiring and trace circuits of television receivers.)

Trained Men Needed for Defense and Military Programs

ELECTRICITY—RADIO—TELEVISION—ELECTRONICS—VITAL in defense program. Trained men whether 16 or up to 50 needed. TRAIN QUICKLY for better rating if drafted—Vital job in industry if not.

FINANCE PLAN Enroll now, pay most of tuition later. **Special plan for men of draft age.**

WE TRAIN YOU IN CHICAGO. At Coyne you learn on real, full-size equipment. Trained instructors show you how, then you do typical jobs yourself. We don't teach by mail.

CLIP COUPON NOW for big new illustrated **Coyne** book. Check whether interested in ELECTRICITY or TELEVISION-RADIO or both. No obligation; no salesman will call. Get vital facts now!

B. W. COOKE, President

COYNE SCHOOL

A TECHNICAL TRADE INSTITUTE CHARTERED NOT FOR PROFIT
Established 1899
500 S. Paulina Dept. 23-73H
Chicago 12, Illinois

ELECTRICITY ★ TELEVISION ★ RADIO ★ REFRIGERATION ★ ELECTRONICS

Mail Coupon for BIG FREE BOOK!

APPROVED FOR VETERANS

B. W. COOKE, President
COYNE SCHOOL
500 S. Paulina St., Chicago 12, Ill. Dept. 23-73H

Send BIG FREE book and details of your training offer. This does not obligate me and **no salesman will call.** I am interested in:

☐ ELECTRICITY ☐ TELEVISION-RADIO

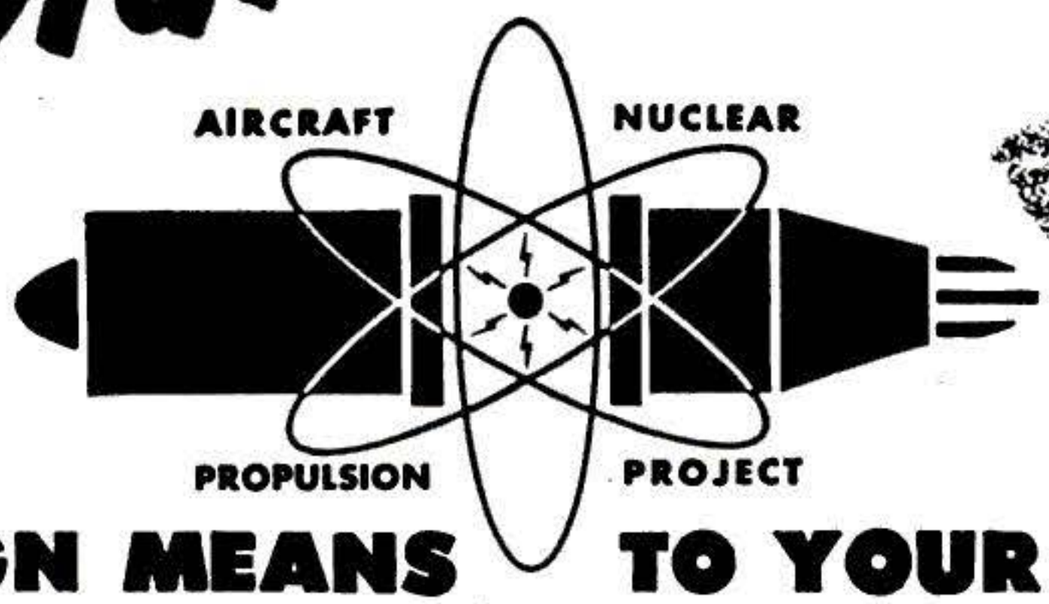
NAME .....

ADDRESS.....

CITY.....STATE.....

Copyrighted material

Design Draftsmen and Draftsmen



WHAT THIS SIGN MEANS TO YOUR FUTURE

Symbol of the atom, this sign is also of special significance to your future! For General Electric is now offering you a career opportunity in the great new field of the age — atomic power!

WORK ON THE DEVELOPMENT OF ATOMIC-POWERED AIRCRAFT ENGINES
AT

GENERAL ELECTRIC

Here is a young and expanding industry whose possibilities are unexplored. Enormous challenges still lie ahead. As one of the men who pioneer the industry now with General Electric, you can look forward to a future of progress and achievement.

Positions are now open with the Aircraft Nuclear Propulsion Project in the following fields:

AIRCRAFT POWER PLANTS	REACTOR DESIGN
CONTROLS & INSTRUMENTATION	TEST EQUIPMENT
TEST FACILITIES	INSTALLATION FACILITIES
TOOLS & DIES	JIGS & FIXTURES

G-E BRINGS THE FOLLOWING ADVANTAGES TO YOUR ATTENTION:

- New, progressive community on the outskirts of Cincinnati, the Queen City of America. Convenient to modern plant.
- Pension, health and life insurance. Company stock bonus plan.

Please write for application to: F. E. Reasoner, A.N.P. Project

GENERAL ELECTRIC
P.O. Box 132, Cincinnati 15, Ohio

Copyrighted material

INVENTORS

Learn how to protect your invention. The U. S. Patent Laws provide that any new and useful art, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if the act of invention is involved. Therefore, every inventor with a valuable invention should take advantage of the Patent Laws and proceed for patent protection in order to safeguard his rights.

A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

CLARENCE A. O'BRIEN & HARVEY JACOBSON

Registered Patent Attorneys

32-B DISTRICT NATIONAL BUILDING

WASHINGTON 5, D. C.

Copyrighted material

AMERICA'S NEWEST $$$$ HOME BUSINESS!

Real live ORANGE TREE Full grown, but only inches high. Notice the tiny oranges you can actually pick and eat—blossoms, too. Easy to grow in any climate.

Earn Big Money — SPARE TIME!

GROW LIVING "MING" TREES

- NEW Amazing HOME-BUSINESS!
- NEW Fascinating HOBBY!

CASH IN ON ANCIENT ORIENTAL SECRETS

Never before has such a PROFITTABLE OPPORTUNITY come to light. Centuries ago, Oriental royalty astounded the world by growing actual LIVING miniature "dwarf trees". These fabulously beautiful trees were desired by all other countries, but the Oriental Emperors jealously guarded their growing secrets. The death penalty was demanded if anyone grew dwarf trees, or gave away the growing secrets. However, Americans in World War II succeeded in purchasing some specimens and brought them to America—NOW THE SECRET IT OUT—and promises to be one of the most profitable spare-time home-businesses ever. Get all the facts! Mail coupon below today.

IT'S EASY!

TO GROW ALL KINDS OF TREES

Even a child can successfully grow valuable perfect miniature specimen trees, once they know the secrets. Lovely FIR, PINE, CYPRESS, fragrant JUNIPER, sturdy OAK, LEMON, CHERRY, ORANGE, nearly every kind. It's easy.

JUNIPER TREE—Only 12" high with a 2 foot spread — an enviable prize in any home, office, school, etc.

CYPRESS TREE — Perfect replica — only 15" high. Green the year around.

★

NATIONAL NURSERY GARDENS
Inglewood 4, California

GROW THEM *AT HOME!* IN YOUR SPARE TIME! NO EXPERIENCE NEEDED!

Start your own Business! If you've ever planted a garden—you know the wonderful sense of accomplishment you feel. Growing actual living miniature trees is A HUNDRED TIMES MORE FASCINATING—yet, can be extremely profitable because these miniature specimens are new and rare...and anything new and rare means *big prices* and *big profits* for those offering it first.

NO LARGE INVESTMENT—NO OVERHEAD

You can *start on a shoestring* because you start with seeds costing *"pennies"*, but sell trees for *"tens of dollars"*. Mother Nature makes money for you. You don't need a lot of equipment or space either. Raise hundreds of trees in your house, yard, garage or window sill—you don't need much room.

TAKES ONLY A FEW MINUTES A DAY

NO LONG HOURS of tedious work—NO STUDYING of detailed instruction courses are necessary. Take care of dozens of trees in 5 minutes daily. Keep your present job—have TWO INCOMES instead of one. Of course, you can grow thousands full time—*it's up to you.*

GROW IN ANY KIND OF CLIMATE

Even if the temperature gets as cold as -10°F. or as hot as 150°F. you can successfully grow your trees year around. They are easy to protect.

SOME SOLD FOR $1,000—EVEN $2,000 EACH

But $25, $50, $100 and more per tree is common. You pocket all the profit. YOU CAN HAVE LIVING TREES TO *SELL ALMOST AT ONCE.* Amazing new secret process permits you to *see results immediately.* No waiting months or years. Mail Free Seed Coupon Today.

Living Midget "Ming" Trees Are Becoming The

SENSATION OF ALL AMERICA

Orders are coming from all over! Living Ming Trees are *fashionable*, smart decorations everywhere.

HELP US FILL THE HUGE DEMAND!

- FROM HOMES—They're a "must" in all homes, as well as all new modern architecture building.

- FROM INTERIOR DECORATORS—They can't seem to get enough of them for their customers.

- FROM CLUBS, HOTELS, SCHOOLS, FLOWER SHOPS, ETC.—These rare and exotic trees are *extremely popular* and in great demand.

FREE!

GENUINE SEEDS & ILLUSTRATED DETAILS

NATIONAL NURSERY GARDENS
8463 So. Van Ness Ave., Dept. N-2
Inglewood 4, California

Please *RUSH ME* FREE SEED AND ILLUSTRATED DETAILS. I understand I am under no obligation. This is a Free offer from you.

Name _____

Address _____

City _____ Zone _____ State _____

Copyrighted material

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are *your* laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

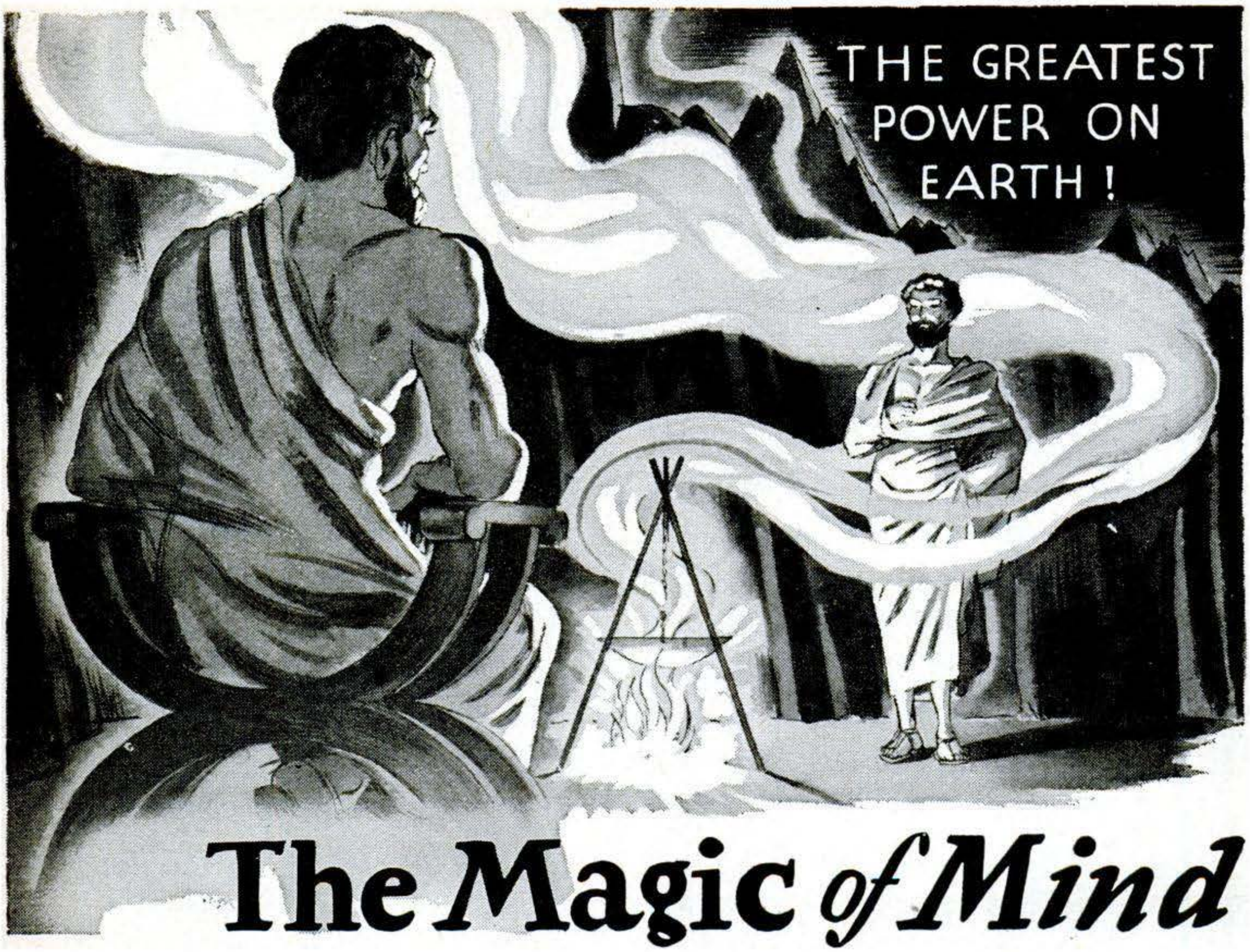
McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

PATENTS • COPYRIGHTS • PATENTS

142-F VICTOR BUILDING, WASHINGTON 1, D. C.

Copyrighted material



The Magic *of Mind*

WERE the great personages of the past victims of a stupendous hoax? Could such eminent men of the ancient world as Socrates, Pericles and Alexander the Great have been deluded and cast under the spell of witchcraft—or did the oracles whom they consulted actually possess *a mysterious faculty of foresight?* That *the human mind can truly exert an influence over things and conditions* was not a credulous belief of the ancients, but a known and demonstrable fact to them. That there exists a wealth of infinite knowledge just beyond the border of our daily thoughts, which can be aroused and commanded at will, was not a fantasy of these sages of antiquity, but a dependable aid to which they turned in time of need.

It is time you realized that the rites, rituals and practices of the ancients were not superstitions, but subterfuges to conceal the marvelous workings of natural law from those who would have misused them. Telepathy, projection of thought, the materializing of ideas into helpful realities, are no longer thought by intelligent persons to be impossible practices, but instead, *demonstrable sciences*, by which a greater life of happiness may be had.

One of America's foremost psychologists and university instructors, says of his experiments with thought transference and the powers of mind—"The successes were much too numerous to be merely lucky hits and one can see no way for guessing to have accounted for the results." *Have you* that open-minded attitude of today which warrants a clear, positive revelation of the facts of mind which intolerance and bigotry have suppressed for years? *Advance with the times;* learn the truth about your inherited powers.

Let this free book explain

The Rosicrucians (NOT a religious organization) have been leaders in introducing the ancient wisdom of mental phenomena. Established throughout the world for centuries, they have for ages expounded these truths to those thinking men and women who sought to make the utmost of their natural faculties. Use the coupon below—avail yourself of a pleasing book of interesting information which explains how you may acquire this most *unusual* and *helpful knowledge.*

The ROSICRUCIANS
(AMORC)

USE THIS COUPON

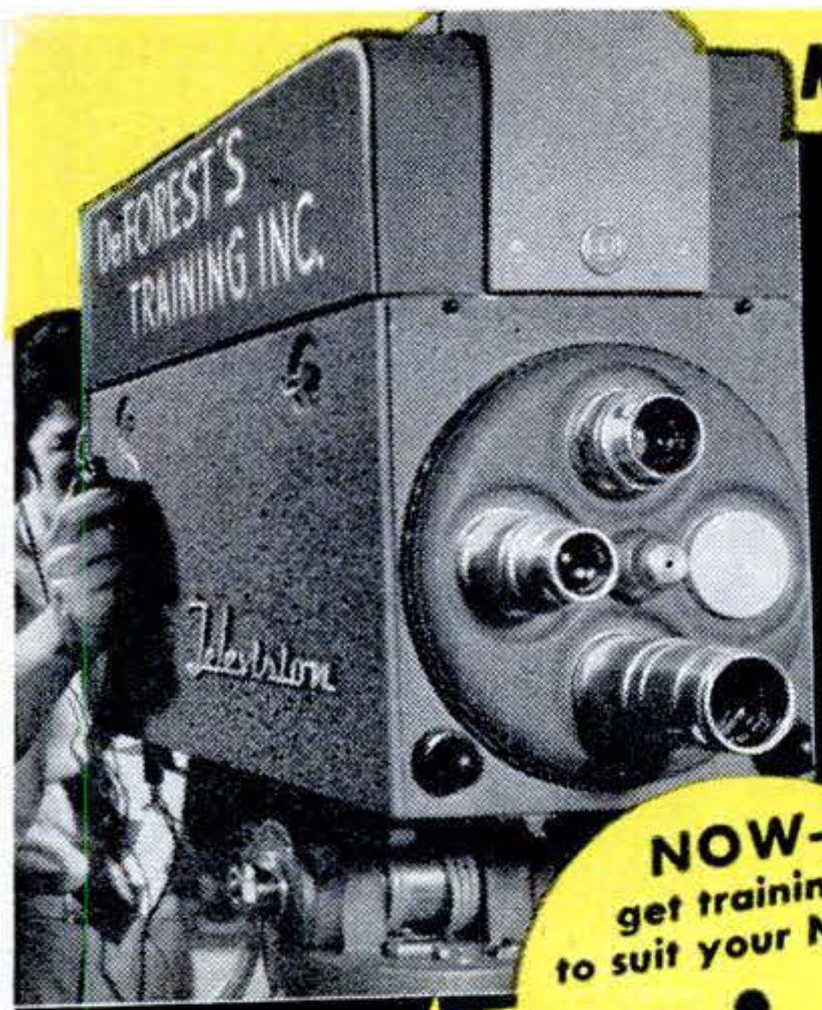
Scribe: P.A.A.
The Rosicrucians, AMORC
San Jose, California

I am sincerely interested in knowing more about this unseen, vital power which can be used in acquiring the fullness and happiness of life. Please send me, without cost, the book, "THE MASTERY OF LIFE," which tells me how to receive this information.

Name _____

Address _____ State _____

Copyrighted material



NOW...from D.T.I.'s MILLION DOLLAR TRAINING CENTER

Learn to master TELEVISION

RADIO - ELECTRONICS

by getting EVERYTHING YOU NEED!

America's amazing multi-billion dollar Television field now offers you a chance of a lifetime to get started toward a grand job or your own business. With TV station limit now raised from 108 to 2053, Television is headed for almost every community. Mail coupon today. See how you may prepare to cash in on the coming TV BOOM.

NOW— get training to suit your NEEDS

TAKE YOUR CHOICE

Come to D.T.I.'s great CHICAGO LABORATORIES

...one of the Nation's FINEST!

Now, in the heart of the nation's TV Center, you can get all of your preparation in D.T.I.'s big, modern, wonderfully equipped training laboratories. Loads of commercial equipment and ample, well qualified instructors help you get a thorough, practical preparation in the SHORTEST POSSIBLE TIME. Part time student Employment Service can help you pay your way while in training.

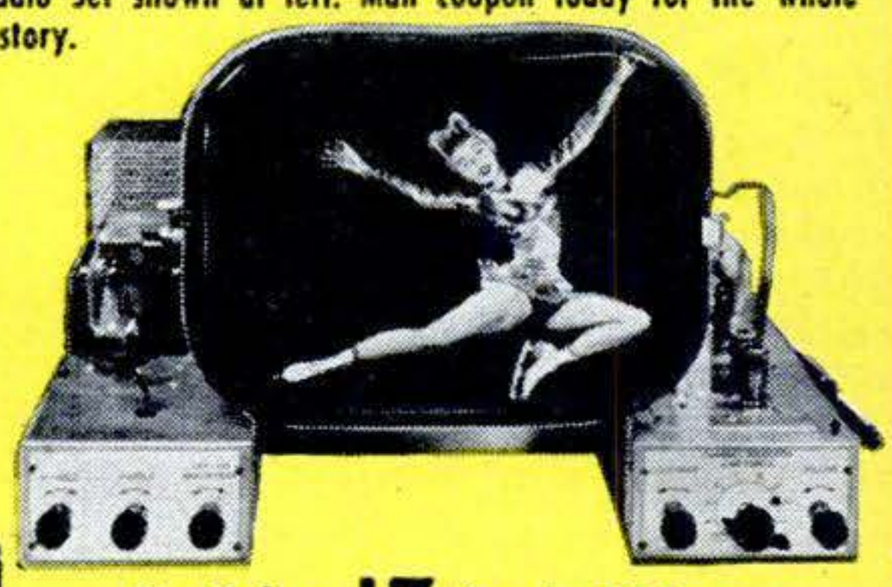
EMPLOYMENT SERVICE

As soon as you complete either the Chicago Laboratory or Home Training, you'll find D.T.I.'s grand Employment Service ready to help you start earning real money. Get full facts. Mail coupon today.

Get ALL of your training AT HOME!...*including setting up your own HOME LABORATORY*

If unable to come to D.T.I.'s big Chicago laboratories, we'll provide you with one of today's most complete and effective combinations of major home training aids. Not only will you get (1) well illustrated lessons and (2) the unique and wonderful aid of instructive HOME MOVIES, but you'll also (3) set up your own HOME LABORATORY

You'll get and keep 16 big shipments of electronic parts—the same type of basic equipment used by students in our wonderfully equipped Chicago laboratories. You'll work over 300 interest-gripping experiments for the practical experience you need. This even includes building and keeping the valuable commercial test equipment and Super Radio Set shown at left. Mail coupon today for the whole exciting story.



Build a 17 inch TV set

After completing foregoing training, and for a moderate added cost, you may build and keep this top quality, 17 inch TV Receiver—an optional feature for valuable added experience.

Use 16 mm. MOVIES Only D.T.I. provides you with the loan of visual training movies of home to help you master important basic points faster . . . easier . . . better!

MILITARY SERVICE! If you're subject to military service, the information we have for you should prove very helpful. Mail coupon today.

89 WAYS TO EARN MONEY IN TELEVISION RADIO ELECTRONICS

ACT NOW! MAIL COUPON TODAY
Get this publication FREE!

DeFOREST'S TRAINING, INC. DEPT. PS-2-J
2533 N. ASHLAND AVE., CHICAGO 14, ILLINOIS

I would like your Opportunity News Bulletin showing "89 Ways to Earn Money In Television-Radio-Electronics"; also, complete facts about the training opportunity made possible by your organization.

Name_____ Age____

Address_____ Apt.____

City_____ Zone____ State____

"ONE OF AMERICA'S FOREMOST TELEVISION TRAINING CENTERS"

Established 1931

De FOREST'S TRAINING, INC.
AFFILIATED WITH
DeVRY Technical INSTITUTE
CHICAGO 14, ILLINOIS

Copyrighted material

Copyrighted material

Training Men for Greater Incomes and Security in Radio-Television

TRAIN BETTER—TRAIN EASIER
MONTHS—OR LESS—FOR
TELEVISION

NEW! NO OBLIGATION PLAN

You Have No Monthly Payment Contract to Sign —Pay For Your Training as You Earn and Learn

You can get into Radio-Television, today's fastest growing big money opportunity field, in *months* instead of years! My completely new "package unit" training plan prepares you in as little as 10 months or even less! No monthly payment contract to sign—thus NO RISK to you! This is America's finest, most complete, practical training—gets you ready to handle any practical job in the booming Radio-Television industry, where trained service technicians are needed—urgently! Start your own profitable Radio-Television shop . . . or accept a good paying job. I have trained hundreds of successful Radio-Television technicians during the past 21 years—and stand ready to train you, even if you have no previous experience! Mail coupon and get all the facts—FREE.

Valuable Equipment Included With Training

The new Sprayberry "package" plan includes many big kits of genuine, professional Radio-Television equipment. You perform over 300 demonstrations, experiments and construction projects. You build a powerful 6-tube 2-band radio set, multi-range test meter, signal generator, signal tracer, many other projects. I also include many useful books and service manuals. All equipment and lessons are yours to keep . . . you have practically everything to set up your own profitable Radio-Television service shop.

Earn Extra Money While You Learn!

Train IN YOUR HOME in spare hours. Keep on with your present job and income while learning. With each training "package" unit, you receive extra plans and "Business Builder" ideas for spare time Radio-Television jobs. New television stations everywhere open vast new opportunities for trained men—and those in training. If you expect to be in the armed forces later, there is no better preparation than practical Sprayberry Radio-Television Training.

SPRAYBERRY ACADEMY OF RADIO
111 NORTH CANAL ST., Dept. 55-T, Chicago 6, Ill.

I invite you to get all the facts—

FREE TO YOU 3 BIG RADIO-TELEVISION BOOKS

I want you to have ALL the facts about my new 10-MONTH Radio-Television Training—without cost! Rush coupon for my three big Radio-Television books: "How to Make Money in Radio-Television" PLUS my new illustrated Television Bulletin PLUS an actual sample Sprayberry Lesson—ALL FREE. No obligation and no salesman will call. Mail coupon NOW!

Approved for Veterans under the G. I. Bill

MAIL COUPON TODAY—NO OBLIGATION

SPRAYBERRY ACADEMY OF RADIO, Dept. 55-T
111 North Canal St., Chicago 6, Ill.

Please rush to me all information on your 10-MONTH Radio-Television Training Plan. I understand this does not obligate me and that no salesman will call upon me. Be sure to include 3 books FREE.

Name..... Age.....

Address.....

City..... Zone..... State.....

Copyrighted material

Operate YOUR OWN Business

EASY TO LEARN QUICKLY ESTABLISHED

Gross $5 Hourly!

If now employed

you can profitably operate part time while building a full time business . . . with servicemen.

Clean and Mothproof Rugs and Upholstery

Increase your income . . with a business of YOUR OWN. We'll help finance your dealership with this world-wide 23 YEAR OLD organization.

Alert dealers can average $5 hourly gross profit on service they render and $3 on EACH serviceman at National Price Guide charges.

If you are honest, dependable and willing to work, we can help you establish a business of your own. You use **proven** successful methods of long established **Duraclean** Dealers. Your services are recommended by America's foremost furniture and department stores.

DURACLEAN safely cleans by absorption! Aerated foam absorbs the dirt holding it in suspension above the surface until removed. No harsh, machine scrubbing. No soaking or shrinkage. Dirt, grease and many unsightly spots vanish as if by magic. Wool fibers come to life . . matted pile rises . . colors revive. Upholstery and floor covering look newer, last longer. Service rendered right in the home. No inconvenience to customers.

DURAPROOF (not illustrated) is another year 'round service rendered right in the home. It not only kills moths and carpet beetles, but makes materials resistant to both. **Duraproof** is the only moth-proof service backed by an International Money Back, 4-YEAR WARRANTY.

Upholstery and floor coverings are serviced "in the home," office or public buildings. No experience needed. Almost every building houses a potential customer needing one or both these modern services. Even auto dealers buy your service to revive upholstery in used cars.

Duraclean dealers sales increased during last war due to calls from customers of other cleaners who were unable to give service because short of help. This is a year-round "war-proof" business.

NATIONALLY ADVERTISED in McCalls, Life, House Beautiful, Ladies Home Journal, Better Homes & Gardens, Macleans (Canada's largest magazine), etc. See the full column ad on p. 119 of January HOUSE BEAUTIFUL.

Portable equipment . . no shop needed. However, some dealers establish a shop or an office after their business has grown. Start full or part time. It's easy to learn . . quickly established. We'll supply Easy Terms to help finance you.

FREE Booklet Open territories are limited! Send coupon for FREE booklet describing these unusual services and how you can become independent in a business of YOUR OWN built upon satisfied customers. No obligation! Mail coupon TODAY!

"OWN a Business" Coupon

Duraclean Co. 3-182 Duraclean Bldg., Deerfield, Ill.

Without obligation to me, send FREE booklet and letter giving full details. Tell me how I may OWN a growing business of my own built upon satisfied customers.

Name .....

Address .....

City ..... Zone .... State .....

TV Picture Tube BOOSTER

Adds new life to old picture tubes

If your main picture tube is the cause of dull pictures with no brightness, this TV picture tube brightener will bring it back to life. If your pictures aren't brighter and clearer after attaching the booster and you're not satisfied with the results your money will be refunded. No tools required, no wires to touch. It's as simple as putting a small tube in a socket. This booster plugs into the rear of your picture tube and doesn't necessitate going inside the set.

$5.00 PPD. Postage prepaid with remittance. C.O.D.s send $1.00 with order, pay postman $4.00 plus charges. Satisfaction guaranteed or your money back.

HUDSON RADIO CO.
BOX 6C, WEST ENGLEWOOD, N. J.

HYPNOTIZE

Modern speed hynotism taught. Methods revealed. You are shown exactly what to say and do. Photo illustrated. Many interesting experiments. Self-hypnosis is fully explained. Amazing results. Detailed hypnotic tests given. Learn this exciting fascinating art. Hold your friends absolutely spellbound. Entertain.

A professional hypnotist tells you his secrets.

Free catalog of new hypnotism books sent on request.

Send for the startling book "HYPNOTISM REVEALED" → **$1**

78 RPM Phonograph Record Inducing Self-Hypnosis & Group-Hypnotism → **$5**

Thought of using sleep for learning, self-development? Send for new intriguing book. "Mental Power Through Sleep Suggestion." → **$1**

A helpful book, "HOW TO SLEEP WITHOUT PILLS" by Dr. Tracy **$1**

MELVIN POWERS, Master Hypnotist, 1324 Wilshire, Dept. 98, Hollywood 17, Calif.

FREE! 100 FOREIGN STAMPS

FREE! Rush coupon now for real stamp collector's new thrill or a beginner's head start. We send you FREE 100 mixed stamps from all parts of the world — Europe, Asia, Africa, Australia. All genuine. All unpicked, unsorted by us and just as received *from foreign* missions, etc., *so you may find a hidden treasure.* Other valuable offers included for your free inspection, PLUS FREE booklet, "Stamp Collector's Guide." Offer limited so — RUSH COUPON TODAY.

GARCELON STAMP CO., Dept. PS-2, Calais, Me.

Rush me FREE 100 Foreign Stamps and booklet. 10¢ enclosed for postage and handling.

Name .....

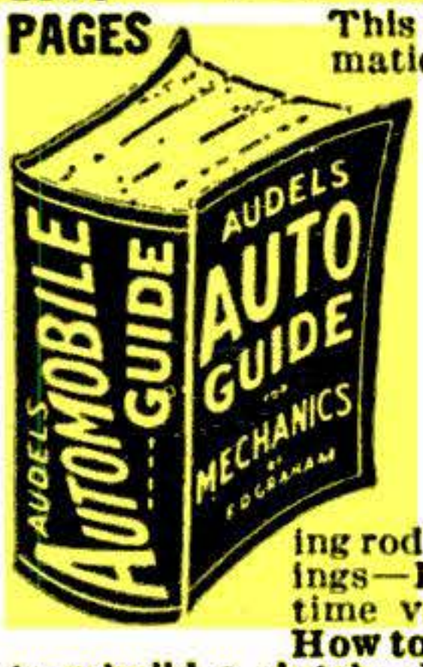
Address .....

City ..... Zone ..... State .....

Copyrighted material

WHAT ALL AUTO MECHANICS WANT TO KNOW

1800 PAGES



This Big Practical Book gives full information with working diagrams covering the principles, construction, ignition, service and repair of modern cars, trucks and buses.

Diesel Engines, Hydramatic & Fluid Drives Fully Explained.

A complete Guide of 1800 pages, with over 1500 illustrations showing inside views of working parts, with instructions for service jobs.

IT PAYS TO KNOW

How to fit pistons—How to locate engine knocks, How to fit connecting rod bearings—How to service main bearings—How to recondition valves—How to time valves—How to adjust fan belts—How to adjust carburetors and chokes, How to rebuild a clutch—How to service automatic transmissions—How to service brakes—How to adjust steering gear—How to cope with ignition troubles—How to service distributors—How to time ignition—How to "tune up" an engine.

$4 COMPLETE • PAY $1 A MO.
TO GET THIS ASSISTANCE FOR YOURSELF SIMPLY FILL IN AND MAIL COUPON TODAY.

AUDEL, Publishers, 49 West 23rd St., New York 10, N. Y.
Mail AUDELS AUTO MECHANICS GUIDE ($4) for free examination. If O. K., I will send you $1 in 7 days; then remit $1 monthly until $4 is paid. Otherwise, I will return book promptly.

Name_____

Address_____

Occupation_____

Employed by_____ $2

AUDELS T.V.-RADIO SERVICE LIBRARY

2 VOLS. $6 COMPLETE PAY ONLY $1 A MO.

HERE IS LATE INFORMATION IN A HANDY FORM FOR RADIO & TELEVISION REPAIRMEN, SERVICEMEN AND STUDENTS

IT PAYS TO KNOW!

AUDELS T.V.-RADIO SERVICE LIBRARY presents the important subjects of Modern Radio, Television, Industrial Electronics, F.M. Public Address Systems, Auto, Marine & Aircraft Radio, Phonograph Pick-Ups, etc. Covers Basic Principles—Construction—Installation — Operation — Repairs — Trouble Shooting. Shows How to get Sharp, Clear T.V. Pictures, Install Aerials—How to Test. Explains Color Systems & Methods of Conversion. 1001 Facts—Over 1260 Pages—625 Illustrations of Parts & Diagrams—Valuable for Quick Ready Reference & Home Study. Tells How to Solve T.V. & Radio Troubles —Answers T.V. & Radio Questions.

Get this Information for Yourself, 7-DAY TEST—ASK TO SEE IT!

MAIL ORDER

AUDEL, Publishers, 49 W. 23rd St., New York 10, N.Y.
Mail AUDEL'S T.V. RADIO SERVICE LIBRARY 2 Vols. $6 on 7 days free trial. If O.K. I will remit $1 in 7 days and $1 monthly until $6 is paid. Otherwise I will return them.

Name_____

Address_____

Occupation_____

Employed by_____ $2

AUDELS Carpenters and Builders Guides

4 vols. $6

Inside Trade Information for Carpenters, Builders, Joiners, Building Mechanics and all Woodworkers. These Guides give you the short-cut instructions that you want—including new methods, ideas, solutions, plans, systems and money saving suggestions. An easy progressive course for the apprentice and student. A practical daily helper and Quick Reference for the master worker. Carpenters everywhere are using these Guides as a Helping Hand to Easier Work, Better Work and Better Pay. To get this assistance for yourself, simply fill in and mail FREE COUPON below.

Inside Trade Information On:

How to use the steel square—How to file and set saws—How to build furniture—How to use a mitre box—How to use the chalk line—How to use rules and scales—How to make joints—Carpenters arithmetic—Solving mensuration problems—Estimating strength of timbers—How to set girders and sills—How to frame houses and roofs—How to estimate costs—How to build houses, barns, garages, bungalows, etc. —How to read and draw plans—Drawing up specifications—How to excavate—How to use settings 12, 13 and 17 on the steel square—How to build hoists and scaffolds—skylights—How to build stairs—How to put on interior trim—How to hang doors—How to lath—lay floors—How to paint.

Step up your own skill with the facts and figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in a handy form, Fully illustrated and Easy to Understand. Highly Endorsed. Check the book you want for 7 DAYS FREE EXAMINATION. Send No Money, Nothing to pay Postman.

MAIL ORDER

AUDEL, Publishers, 49 W. 23 St., NEW YORK 10, N. Y.

Please send me postpaid for FREE EXAMINATION books marked (x) below. If I decide to keep them I agree to mail $1 in 7 Days on each book or set ordered and further mail $1 monthly on each book or set until I have paid price, otherwise I will return them.

- ☐ AUTOMOBILE MECHANICS GUIDE, 1800 Pages $4
- ☐ TRUCK & TRACTOR GUIDE, 1299 Pages . . . 4
- ☐ DIESEL ENGINE MANUAL, 575 Pages 2
- ☐ MACHINISTS HANDY BOOK, 1650 Pages . . . 4
- ☐ WELDERS GUIDE, 400 Pages 1
- ☐ BLUE PRINT READING, 416 Pages 2
- ☐ MATHEMATICS & CALCULATIONS, 700 Pages. 2
- ☐ SHEET METAL PATTERN LAYOUTS, 1100 Pages 4
- ☐ SHEET METAL WORKERS HANDY BOOK, 388 Pgs. 1
- ☐ MECHANICAL DRAWING GUIDE, 160 Pages . . 1
- ☐ MECHANICAL DRAWING & DESIGN, 480 Pages 2
- ☐ AIRCRAFT WORKER, 240 Pages 1
- ☐ TELEVISION SERVICE MANUAL, 384 Pages. . 2
- ☐ RADIOMANS GUIDE, 914 Pages 4
- ☐ ELECTRONIC DEVICES, 216 Pages 2
- ☐ ELECTRIC MOTOR GUIDE, 1000 Pages 4
- ☐ ELECTRIC WIRING DIAGRAMS, 272 Pages . . 1
- ☐ ELECTRICIANS EXAMINATIONS, 250 Pages. . 1
- ☐ ELECTRIC POWER CALCULATIONS, 425 Pages. 2
- ☐ HANDY BOOK OF ELECTRICITY, 1440 Pages. . 4
- ☐ ELECTRIC DICTIONARY, 9000 Terms 2
- ☐ ELECTRIC LIBRARY, 7000 Pages (12 Book Set) 18
- ☐ MARINE ENGINEERS HANDY BOOK, 1258 Pgs. 4
- ☐ SHIPFITTERS HANDY BOOK, 250 Pages . . . 1
- ☐ REFRIGERATION & Air Conditioning, 1280 Pgs. 4
- ☐ MILLWRIGHTS & MECHANICS GUIDE, 1200 Pgs. 4
- ☐ POWER PLANT ENGINEERS GUIDE, 1500 Pages 4
- ☐ ENGINEERS & FIREMANS EXAMS, 525 Pages . 1
- ☐ PUMPS, Hydraulics & Air Compressors, 1658 Pgs. 4
- ☐ ENGINEERS LIBRARY (3 Book Set) 9
- ☐ MECHANICAL DICTIONARY, 950 Pages 4
- ☐ GARDENERS & GROWERS GUIDES (4 Book Set) 6
- ☐ CARPENTERS & BUILDERS GUIDES (4 Book Set) 6
- ☐ PLUMBERS & Steamfitters Guides (4 Book Set) 6
- ☐ MASONS AND BUILDERS GUIDES (4 Book Set) 6
- ☐ PAINTERS & DECORATORS MANUAL, 450 Pgs. 2
- ☐ HOUSE HEATING GUIDE, 1000 Pages 4
- ☐ OIL BURNER GUIDE, 384 Pages 1

Check NOW!

You Can Look Over Any Guide In Your Own Home — Start the Easy Payments If Satisfied

MAIL THIS TODAY

Name_____

Address_____

Occupation_____

Employed by_____ $2

Copyrighted material

YOU SHAVE CLEANER IN ½ THE TIME

"Get it over with" fast with Schick Injector, world's only razor specially engineered to give you "Twice Over" smoothness with "Once Over" Shaving!

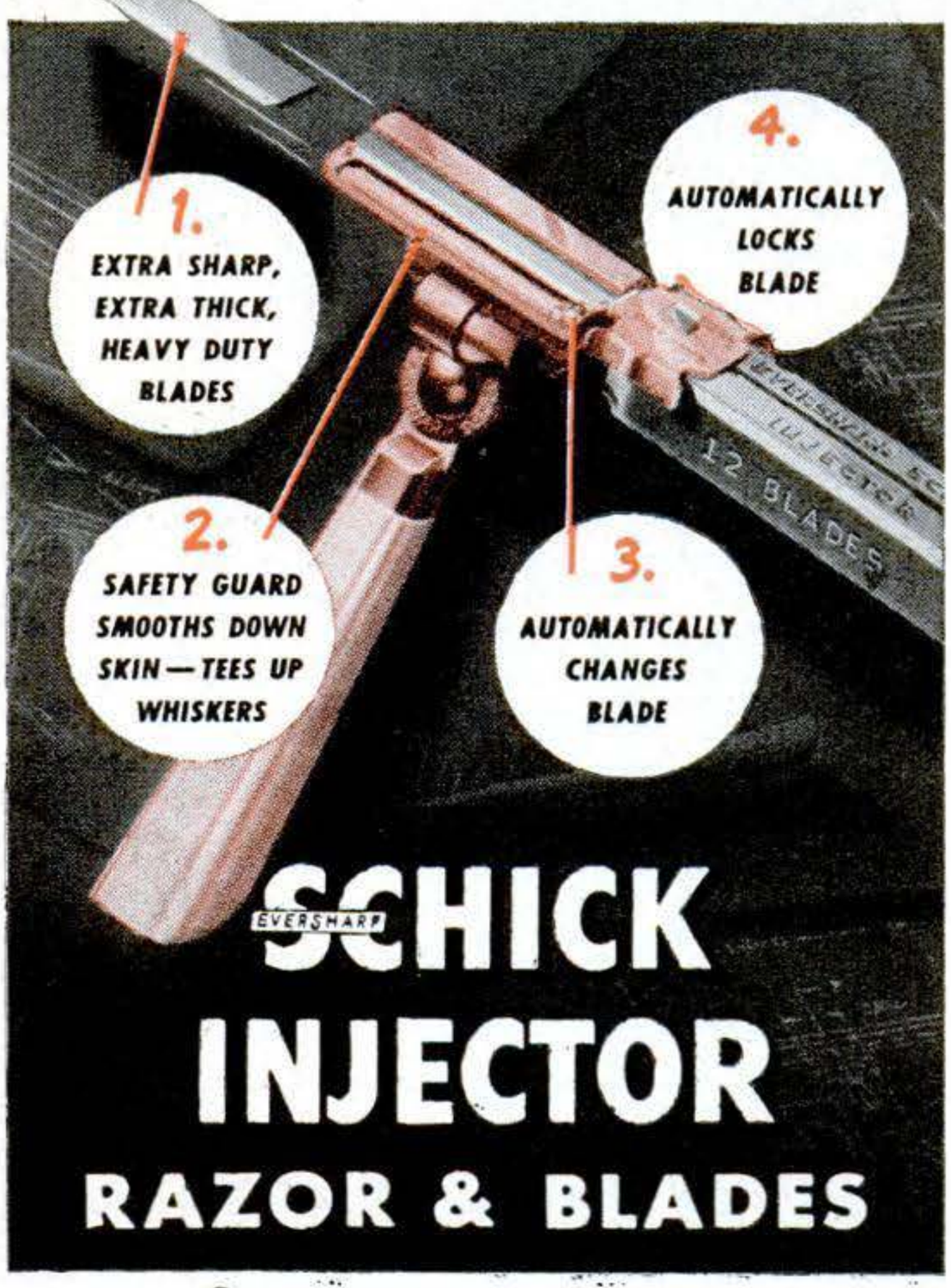
No movable parts that get out of adjustment, no detachable parts that can be dropped or misplaced. Specially designed to "fit" your face—under nose, around lips!

Today, get your complete razor kit:

- ★ Gold-Plated Razor
- ★ 12 Scalpel-sharp "Gold Pack" Blades
- ★ Handy Travel Case

Big $1.75 Value. Now Only 98¢

Only razor offering these 4 advantages



©1952, Eversharp Inc 350 Fifth Ave., N. Y. C

Letters

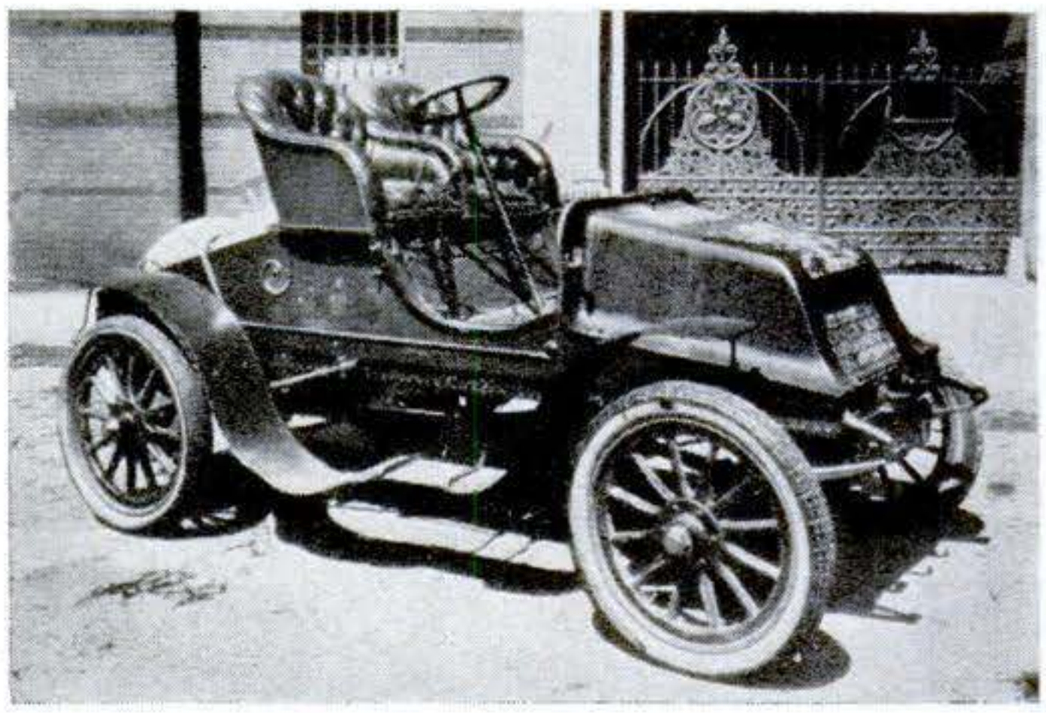
Mail-Train Story Pleases Mailman

That's a very good piece on the mail train in your December issue [p. 81]. So many free-lance writers sound superficial, but Mr. Comstock knows his subject. The article is definitely "post office" as we in the PO know it. The screwball address writers got a proper ribbing too.

City Bag Toter, Chicago.

First Car to Cross the U.S.

Travel is speeding up a bit. I see that Louie Mattar has driven across the country nonstop in about 90 hours [Nov. '52, p. 174].



The first car to cross the U.S., in 1903, arrived in New York 63 days after it left San Francisco. The car, a Winton [above], is now in the Smithsonian Institution.

Ralph Peters, NYC.

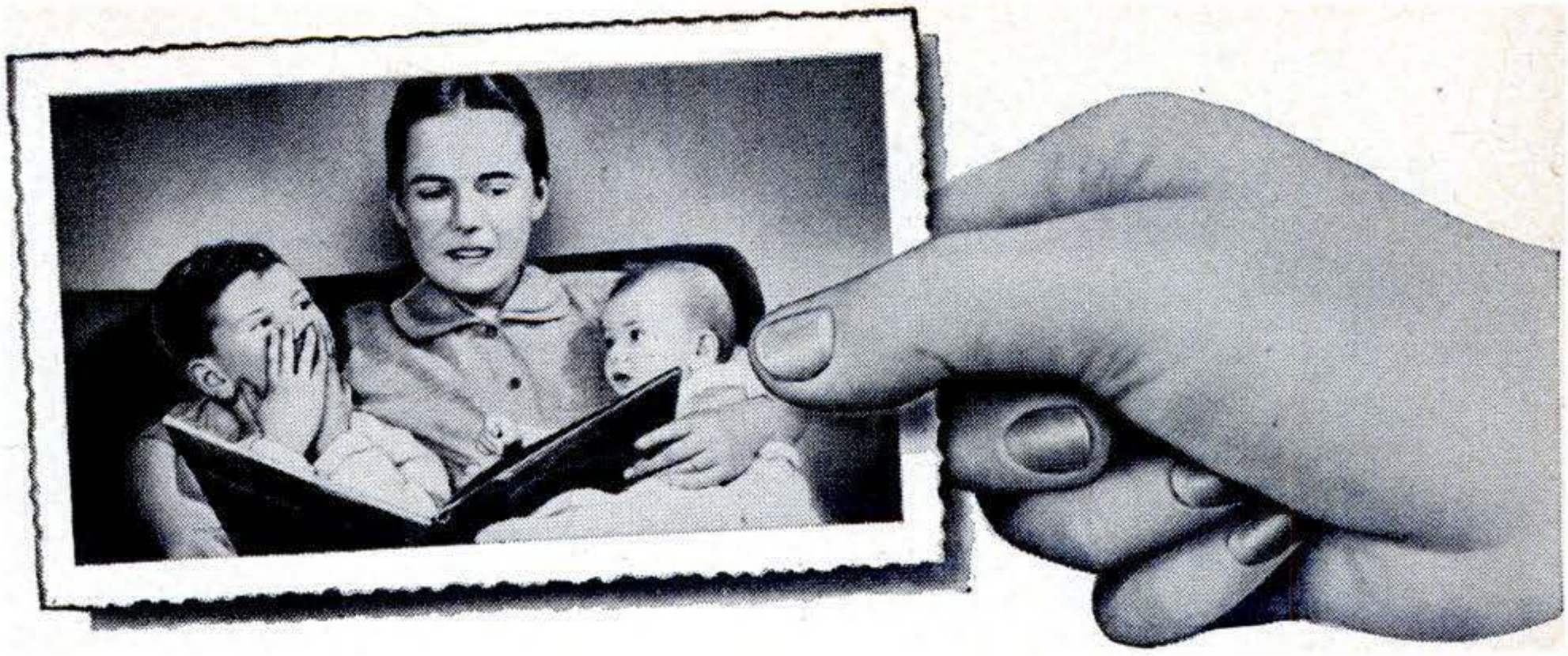
Transformers for Tachometers

The Stancor A4352 transformer used in the article "How to Build a Rev Counter" [Dec. '52, p. 174] has been discontinued. Will the A4351 work just as well?

Kenneth Greenberg, Chicago.

Stancor's A4351, essentially the same as the A4352, will work fine. Other usable transformers include the Thordarson T20-A00, the UTC R29 and the Merit A2924.

Copyrighted material



THREE REASONS WHY

I'm Preparing Myself for a Better Job!

"EVEN if I had only myself to think about, I'd want to get ahead in life. But I've got Mary and the two kids to consider. And they're *three of the best reasons a man ever had* for wanting a better job—and wanting to *keep on* "going places" as the years pass by. So last month I stopped just "wishing" and "hoping" for promotion. I DID something to *make* it happen. I enrolled in an I.C.S. course that's right up my alley."

1973 Promotions in One Single 120-Day Period!

If YOU want to start moving up in the world—getting higher pay, at more interesting work, and ridding yourself and your family of constant money worries—then I.C.S. is ready to help *you*, just as it has helped thousands of others. For example, a recent Survey showed that, *in one single 120-day period*, 1973 I.C.S. students were promoted to better jobs!

For only a few cents a day you can prepare yourself right at home, in spare time. From 391 different I.C.S. courses, choose the one you need to move up to a better job in your present field or to break into a profitable and interesting *new* career.

FREE—2 INTERESTING BOOKS

Mail coupon for Free Book about subject you're interested in. Also, free, *"How to Succeed"* —36-page goldmine of advice on Why People Fail, How to Pick Your Goal, How to Develop Hidden Talents, etc. Mail coupon, without obligation, NOW.

INTERNATIONAL CORRESPONDENCE SCHOOLS ICS

BOX 7629-N, SCRANTON 9, PENNA.

Without cost or obligation, send me "HOW to SUCCEED" and the booklet about the course BEFORE which I have marked X:

ART
- ☐ Commercial Art
- ☐ Magazine and Book Illustrating
- ☐ Cartooning
- ☐ Show Card and Sign Lettering
- ☐ Fashion Illustrating

AUTOMOTIVE
- ☐ Automobile, Mechanic
- ☐ Auto-Elec. Technician
- ☐ Auto Body Rebuilding and Refinishing
- ☐ Diesel—Gas Engines

AVIATION
- ☐ Aeronautical Engineering Jr.
- ☐ Aircraft Engine Mechanic
- ☐ Airplane Drafting

BUILDING
- ☐ Architecture
- ☐ Arch. Drafting
- ☐ Building Contractor
- ☐ Estimating
- ☐ Carpenter and Mill Work
- ☐ Carpenter Foreman
- ☐ Reading Blueprints
- ☐ House Planning
- ☐ Plumbing
- ☐ Heating
- ☐ Steam Fitting
- ☐ Air Conditioning
- ☐ Electrician

BUSINESS
- ☐ Business Administration
- ☐ Certified Public Accountant
- ☐ Accounting
- ☐ Bookkeeping
- ☐ Stenography and Typing
- ☐ Secretarial
- ☐ Federal Tax
- ☐ Business Correspondence
- ☐ Personnel and Labor Relations
- ☐ Advertising
- ☐ Retail Business Management
- ☐ Managing Small Business
- ☐ Sales Management
- ☐ Salesmanship
- ☐ Traffic Management

CHEMISTRY
- ☐ Chemical Engineering
- ☐ Chemistry
- ☐ Analytical Chemistry
- ☐ Petroleum—Nat'l Gas
- ☐ Pulp and Paper Making
- ☐ Plastics

CIVIL, STRUCTURAL ENGINEERING
- ☐ Civil Engineering
- ☐ Structural Engineering
- ☐ Surveying and Mapping
- ☐ Structural Drafting
- ☐ Highway Engineering
- ☐ Reading Blueprints
- ☐ Concrete Construction
- ☐ Sanitary Engineering

DRAFTING
- ☐ Aircraft Drafting
- ☐ Architectural Drafting
- ☐ Electrical Drafting
- ☐ Mechanical Drafting
- ☐ Structural Drafting
- ☐ Sheet Metal Drafting
- ☐ Mine Surveying and Drafting

ELECTRICAL
- ☐ Electrical Engineering
- ☐ Electrician
- ☐ Electrical Maintenance
- ☐ Electrical Drafting
- ☐ Electric Power and Light
- ☐ Lineman

HIGH SCHOOL
- ☐ High School Subjects
- ☐ College Preparatory
- ☐ Mathematics
- ☐ Commercial
- ☐ Good English

MECHANICAL AND SHOP
- ☐ Mechanical Engineering
- ☐ Industrial Engineering
- ☐ Industrial Supervision
- ☐ Foremanship
- ☐ Mechanical Drafting
- ☐ Machine Design-Drafting
- ☐ Machine Shop Practice
- ☐ Tool Design
- ☐ Industrial Instrumentation
- ☐ Machine Shop Inspection
- ☐ Reading Blueprints
- ☐ Toolmaking
- ☐ Gas—Electric Welding
- ☐ Heat Treatment—Metallurgy
- ☐ Sheet Metal Work
- ☐ Sheet Metal Pattern Drafting
- ☐ Refrigeration

POWER
- ☐ Combustion Engineering
- ☐ Diesel—Electric
- ☐ Electric Light and Power
- ☐ Stationary Steam Engineering
- ☐ Stationary Fireman

RADIO, TELEVISION, COMMUNICATIONS
- ☐ General Radio
- ☐ Radio Operation
- ☐ Radio Servicing—FM
- ☐ Television
- ☐ Electronics
- ☐ Telephone Work

RAILROAD
- ☐ Locomotive Engineer
- ☐ Diesel Locomotive
- ☐ Air Brakes ☐ Car Inspector
- ☐ Railroad Administration

TEXTILE
- ☐ Textile Engineering
- ☐ Cotton Manufacture
- ☐ Rayon Manufacture
- ☐ Woolen Manufacture
- ☐ Loom Fixing
- ☐ Finishing and Dyeing
- ☐ Textile Designing

HOME ARTS
- ☐ Dressmaking and Designing
- ☐ Cookery
- ☐ Tea Room Management

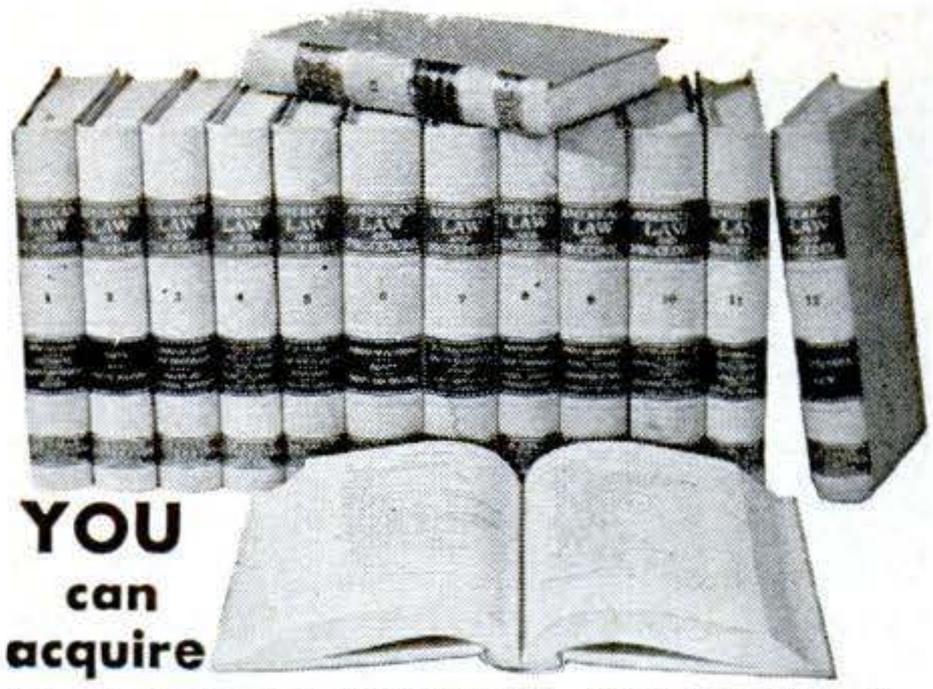
Name_____ Age_____ Home Address_____

City_____ State_____ Working Hours_____ A.M. to_____ P.M.

Occupation_____

Special tuition rates to members of the Armed Forces. Canadian residents send coupon to International Correspondence Schools Canadian, Ltd., Montreal, Canada.

Copyrighted material



YOU can acquire

LAW NIGHTS AT HOME! LL. B. DEGREE

LaSalle's famous Law Library—used as reference in many Law libraries and Law offices—has enabled thousands to master Law surprisingly fast, in spare hours at home, for business and professional advancement.

These 14 remarkable volumes, compiled by leading professors and lawyers, cover the whole basic field of Law in condensed, orderly, simplified manner.

You advance rapidly with this great library, plus special lectures furnished. We guide you step-by-step with personalized Problem Method of instruction . . . you *learn by doing*—handling legal problems—not by memorizing rules.

Send for two FREE 48-page booklets, "Law Training for Leadership," and "Evidence," answering questions about Law and its value to you, and telling how LaSalle Law graduates are winning rapid advancement in business and public life. Mail coupon below. No obligation.

LA SALLE EXTENSION UNIVERSITY
A Correspondence Institution

417 S. Dearborn St. Dept. 283L Chicago 5, Ill.

Send me your two FREE booklets described above, without obligation.

*Name*_____ *Age*_____

*Street*_____

*City, Zone & State*_____

INVENTORS

Your first step—if you consider your invention to be something of importance—is to have a search made of pertinent, prior U. S. patents. If our search report indicates probable patentability of your invention, you may apply for a patent which gives you the right to exclude others from making, using or selling your invention as claimed for a term of 17 years.

This firm is registered to practice before the U. S. Patent Office and is available to assist in the preparation of the necessary drawings, specification and claims.

Ask for a copy of our instructive booklet "Patent Protection for Inventors" and our convenient "Evidence of Invention" form. No obligation.

VICTOR J. EVANS & Co. *Merlin M. Evans*
REGISTERED PATENT ATTORNEY
840 B MERLIN BUILDING, WASHINGTON 6, D. C.

GET INTO THE ELECTRICAL FIELD
WHERE THE BIG MONEY GROWS

ELECTRICAL ENGINEERING • ELECTRICITY PRACTICAL • ELECTRONICS INDUSTRIAL

• Few fields offer *more* or *bigger* opportunities than electricity. There's GREAT and GROWING demand—opportunities to reap high pay, independence, security. If you want an important place in this intensely interesting field, study at home for success. Use spare time to move steadily up to better and better jobs. This 55-year-old career training school offers you reliable training and helpful guidance. Don't wait.

Just write ELECTRICAL TRAINING on a post card, with your name and address, and mail at once for full information. Address—

AMERICAN SCHOOL, Dept. E246, Drexel Ave. at 58th St., Chicago 37, Ill.

INVENTIONS
WANTED AT ONCE

If you want to market, or sell, your invention for cash or royalties, **Write for our Free Booklet.** Send no drawings. We also welcome hearing from firms, or private capital, wishing to review inventions in any field. We will be glad to send notice of our clients inventions.

GLOBAL MARKETING SERVICE
1404 Mitchell Street Dept. SD Oakland 1, Calif.

INVENTORS

Send for
PATENT INFORMATION
Book and
INVENTOR'S RECORD
without obligation

GUSTAVE MILLER
23PS Warner Building
Washington 4, D. C.

REGISTERED PATENT ATTORNEY
PATENT ATTORNEY & ADVISOR
U. S. NAVY DEPT. 1930-1947
ASSOCIATE EXAMINER
U. S. PAT. OFF. 1922-1929
PATENT LAWYER

INVENTORS

Whether an invention is patentable can be substantially determined by a search of the U. S. Patent records. Without **obligation, write for information explaining the steps you should take to secure a patent.**

JOHN N. RANDOLPH
Registered Patent Attorney
205 Columbian Building Washington 1, D. C.

PATENTS
C. A. SNOW & CO.

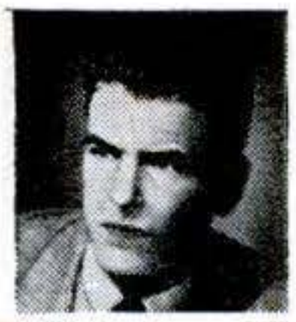
REGISTERED PATENT ATTORNEYS
WRITE FOR INFORMATION TO
426 SNOW BUILDING, WASHINGTON 1, D. C.

INVENTORS

IF YOU WISH TO PROTECT YOUR INVENTION, You should take steps to protect it by a U. S. Patent. Write me for "INVENTION RECORD" FORM

CARL MILLER
REGISTERED PATENT ATTORNEY
WOOLWORTH BLDG., 35th FLOOR, 23C
NEW YORK CITY

Copyrighted material



"We have been using your book on Auto Repair for the past year and feel like it is a third man around the shop."—*F. M. Scott, Stanwood, Wash.*

"Fixed motor in 30 minutes another mechanic had worked on half a day."—*C. Auberry, Murfreesboro, Tenn.*

"Instructions so clear, have no trouble learning anything about any car. Now working as mechanic in big plant."—*S. Ordonez, San Francisco, Calif.*

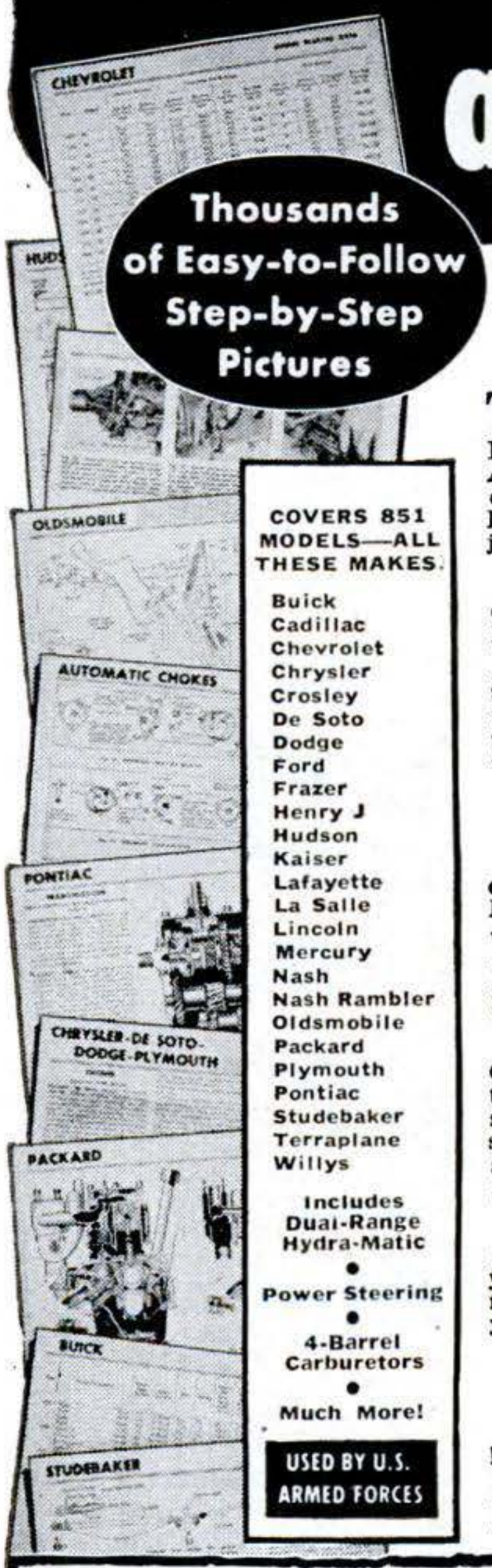
"So easy to understand—have done jobs with Manual I would not have attempted without it."—*C. L. Vanerstrom, Hazel Park, Mich.*

"I have found my MOTOR Manual a wonderful help. It has put me in a position to do every job."—*S. L. Sharpless, Los Angeles, Cal.*

THOUSANDS OF MEN ARE RAVING ABOUT THIS GIANT GUIDE!

Now YOU Can Be a "Cracker-jack" at Auto Repairs!

BRAND-NEW REVISED EDITION!



Thousands of Easy-to-Follow Step-by-Step Pictures

COVERS 851 MODELS—ALL THESE MAKES:

Buick
Cadillac
Chevrolet
Chrysler
Crosley
De Soto
Dodge
Ford
Frazer
Henry J
Hudson
Kaiser
Lafayette
La Salle
Lincoln
Mercury
Nash
Nash Rambler
Oldsmobile
Packard
Plymouth
Pontiac
Studebaker
Terraplane
Willys

Includes Dual-Range Hydra-Matic
•
Power Steering
•
4-Barrel Carburetors
•
Much More!

USED BY U.S. ARMED FORCES

Easy-Step-by-Step Instructions Show How to do ANY Job on ANY Car—from 1935 through 1952!

THOUSANDS of men are raving about MOTOR'S BIG NEW ILLUSTRATED AUTO REPAIR MANUAL! It enables them to do *any* job FASTER and better; do MORE jobs; make MORE money!

Whether it's on a 17-year-old "jaloppy" or a brand-new 1952 beauty. YOU, too, can "breeze through" *any* repair job quickly, easily, right! Just look up the make, model, and job in the quick index—and *go to it!*

Everything You Need to Know to Repair Any Car!

This BIG NEW REVISED edition has MORE REPAIR INFORMATION THAN EVER—right up to the minute! Over 800 big pages. 2400 "This-Is-How" pictures — clear drawings, diagrams, cut-away photos that lead you every step of the way. Over 200 "Quick-Check" charts containing more than 38,000 essential repair specifications. Over 225,000 service and repair facts. Clear, simple directions. You *can't* go wrong!

Any man—even a green beginner—can do a good job. If you're a top-notch mechanic, you'll find yourself tackling jobs now that you wouldn't touch before!

Earn More Money! Win Greater Prestige!

The editors of MOTOR'S Manual have put together the "Know-How" from over 170 *Official Factory Shop Manuals;* "boiled it down" into one handy book!

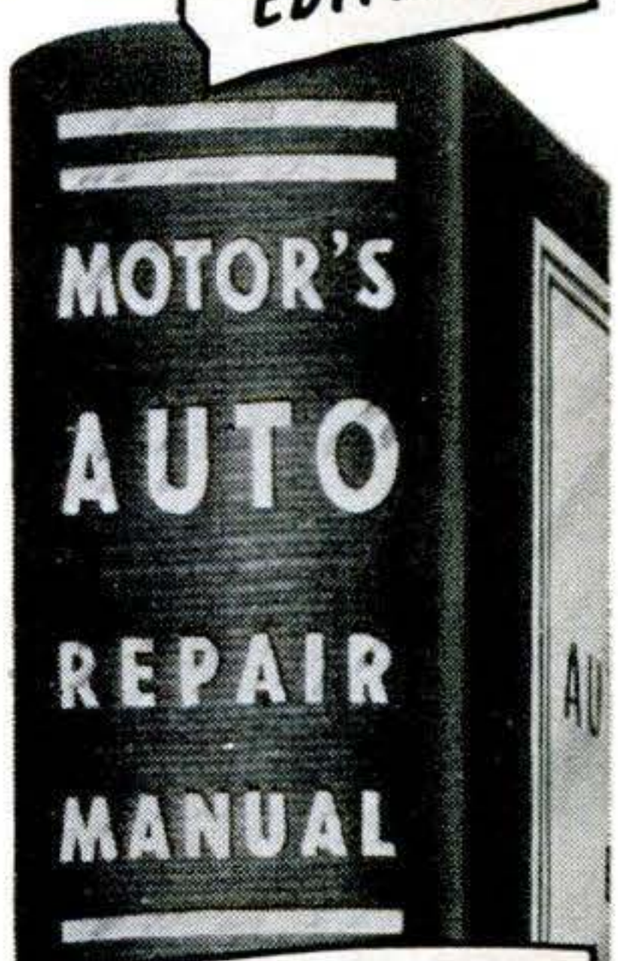
Includes ALL Automatic Transmissions (including new Dual Range Hydra - Matic). Covers the newest Carburetors, Engines (including new De Soto, Lincoln, Ford) . . . Chokes . . . Fuel Pumps . . . Oil Filters . . . Starting Motors . . . Generators . . . Distributors . . . Clutches . . . Universals . . . Axles . . . Brakes . . . Power Steering . . . Shock Absorbers, etc.

Valuable help in Body Service. Factory Specifications and Adjustment Tables. Tune-up Charts. Tables of Measurements and Clearances. Overhauling and Replacement Facts — AND MUCH, MUCH MORE.

Used by Armed Forces, hundreds of thousands of auto service men! YOU'LL want it, too, once you see its over 800 giant pages—almost a foot high!—its 2400 close-up pictures! Try it on the following UNCONDITIONAL GUARANTEE:

Try Book for a Week FREE

Send No Money. Pay nothing to postman. Test book in your own garage or shop. *It's GUARANTEED to pay for itself in 7 days.* If it doesn't, just return the book, and owe nothing. You don't risk a penny. Rush coupon for your free-trial copy of this great money-saving Manual. MOTOR Book Dept., Desk 22, 250 West 55th St., New York 19, N. Y.



SEND NO MONEY! TRY BOOK FOR A WEEK FREE!

Same FREE 7-Day Offer on MOTOR'S TRUCK and TRACTOR REPAIR MANUAL

Covers EVERY job on EVERY gasoline-powered truck and farm tractor made from 1936 thru 1952. 2200 pictures, 930 big 8½ x 11-inch pages, 300,000 facts. Used by Armed Forces. All types Gasoline Engines, Fuel Systems, Governors, Lubrication Systems, Ignition Systems, Starters, Generators, Clutches, Transmissions, Axles, Torque Dividers, Transfer Cases, Brakes, Steering, etc. Check proper box in coupon for free trial.

MAIL COUPON NOW FOR 7-DAY FREE TRIAL

MOTOR Book Dept., Desk 22,
250 West 55th Street, New York 19, N. Y.

Rush to me at once: (Check box opposite book you want)

☐ **MOTOR'S New AUTO REPAIR MANUAL** If O.K. I will remit $1 in 7 days (plus 35c delivery charge), then $2 monthly for 2 months, and a final payment of 95c a month later. Otherwise I will return book postpaid in 7 days. *(Foreign price, remit $8 cash with order.)*

☐ **MOTOR'S New TRUCK AND TRACTOR REPAIR MANUAL.** (Described at left.) If O.K. I will remit $2 in 7 days, and $2 monthly for 3 months, plus 35c delivery charge with final payment. Otherwise I will return book promptly. *(Foreign price, remit $10 cash with order.)*

Print Name .....Age .....

Print Address .....

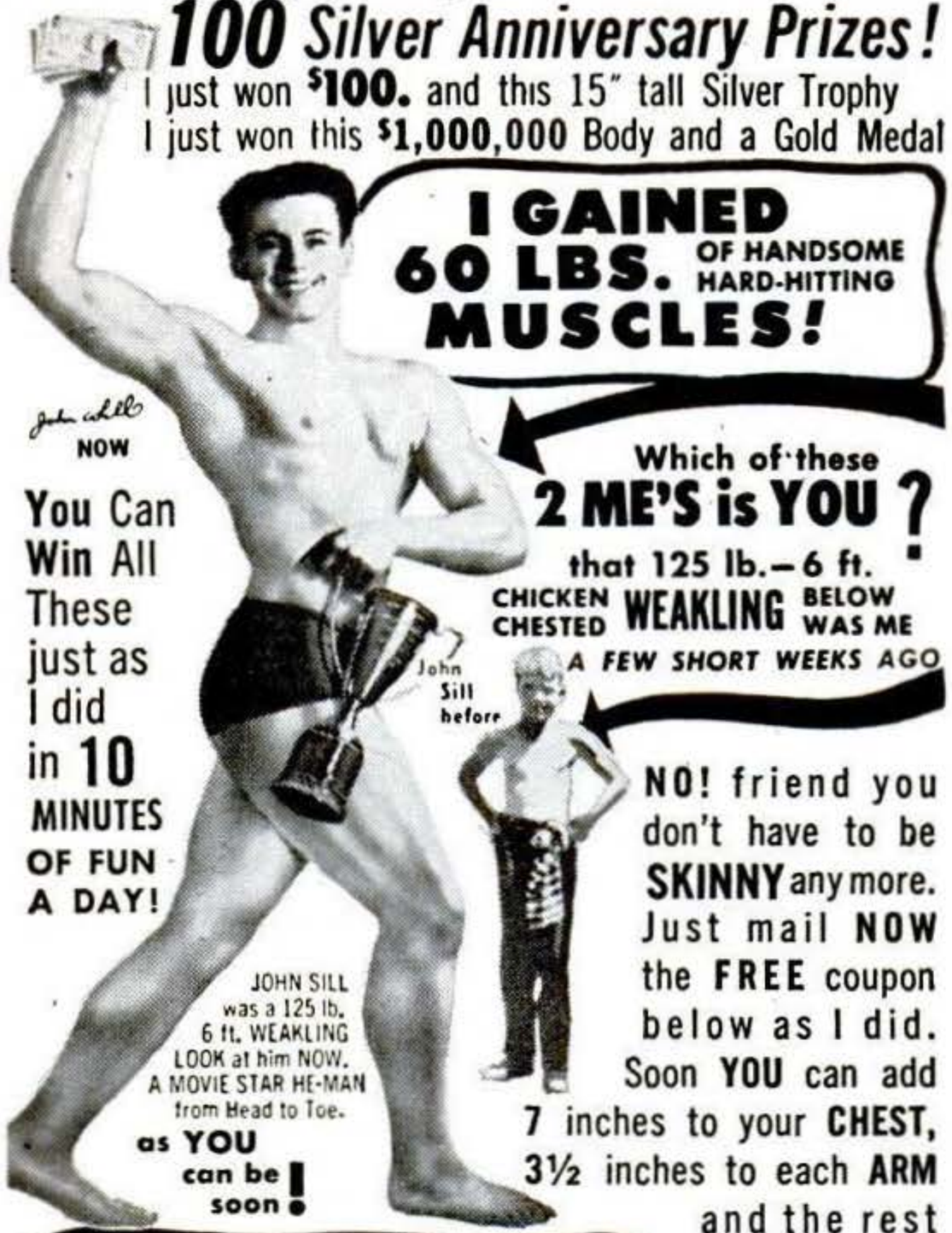
City & Zone No.....State.....

☐ **SAVE 35c delivery charges** by enclosing WITH COUPON check or money order for full payment of $5.95 for Auto Repair Manual (or $8.00 for Truck and Tractor Manual). Same 7-day return-for-refund privilege applies.

Copyrighted material

Hi there, Pal! Win Some of these 100 Silver Anniversary Prizes!

I just won $100. and this 15" tall Silver Trophy
I just won this $1,000,000 Body and a Gold Medal



COME On, PAL, NOW YOU give me **10** PLEASANT MINUTES A DAY IN YOUR OWN HOME and I'll give **YOU** A NEW HE-MAN BODY for your OLD SKELETON FRAME

NO! I don't care how skinny or flabby you are. I'll make you OVER by the SAME method I turned myself from a wreck to the strongest of the strong. Why can't I do for you what I did for MANY THOUSANDS of skinny fellows like You?

Develop YOUR 520 MUSCLES
Gain Pounds, INCHES FAST!

YES! You'll see INCHES of MIGHTY MUSCLE added to your ARMS and CHEST. Your BACK and SHOULDERS broadened. From head to heels, you'll gain SIZE, POWER, SPEED. You'll be A WINNER in EVERYTHING you tackle.

THIS MAY BE YOUR LAST CHANCE TO GET ALL 5 PICTURE PACKED COURSES MILLIONS HAVE BEEN SOLD FOR $1 AND MORE — FOR 10¢

BOTH *FREE* FOR QUICK ACTION!
1. Photo Book of STRONG MEN 2. MUSCLE METER

Dept. PS 32
Tell Me How To WIN $100. etc.

"Jowett Courses greatest in World for Building All-Around HE-MEN" —R. F. Kelley Physical Director

JOWETT INSTITUTE OF PHYSICAL TRAINING
220 FIFTH AVENUE, NEW YORK 1, N. Y.

Dear George: Please mail to me FREE Jowett's Photo Book of Strong Men and a Muscle Meter, plus all 5 HE-MAN Building Courses: 1. How to Build a Mighty Chest. 2. How to Build a Mighty Arm. 3. How to Build a Mighty Grip. 4. How to Build a Mighty Back. 5. How to Build Mighty Legs—Now all in One Volume "How to become a Mighty HE-MAN." ENCLOSED FIND 10c FOR POSTAGE AND HANDLING (no C.O.D.'s).

NAME.....AGE.....
ADDRESS.....
CITY.....ZONE.....STATE.....

ARCADIA ELECTRIC POCKET *Viewers*

FOR 2x2 SLIDES BANTAM & STRIP FILM

POWERED BY STANDARD FLASH-LIGHT BATTERIES

DELUXE MODEL $5.95

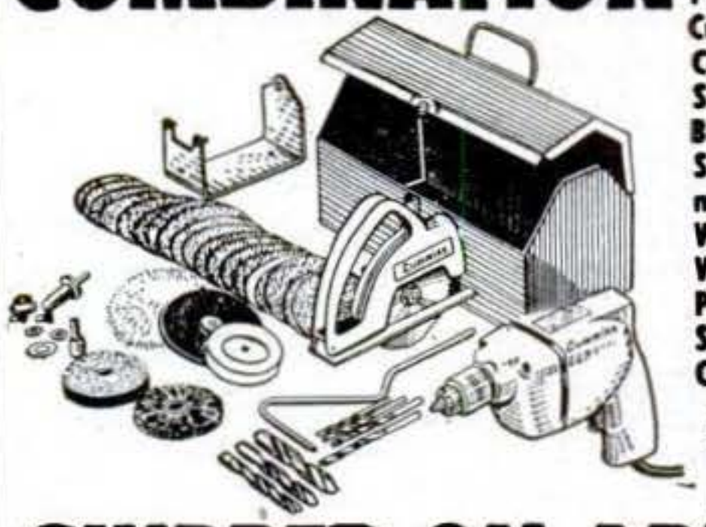
STANDARD MODEL $4.95

FOLDS TO FIT POCKET OR PURSE

• *IF YOUR DEALER CAN'T SUPPLY YOU WRITE DIRECT—*

ARCADIA MANUFACTURING CO.
3214 LAWRENCE AVENUE
CHICAGO, ILLINOIS

The New Improved Model 38-98
DYNAMIC POWER TOOL COMBINATION



INCLUDES: Cummins ¼" Pistol-Grip Electric Drill; Cummins Saw Attachment; Combination Saw Blade; Set of Drills; Lambs Wool Bonnet; 13 Sanding Discs; Steel Arbor and Attachments; Cloth Buffing Wheel; Grinding Wheel; Wire Wheel Brush; Steel Paint Mixer; Steel Bench Stand; Portable Steel Carrying Case.

Price of Dynamic Power Tool Combination complete is $29.95

SHIPPED ON APPROVAL
No Money With Order — No C.O.D.

Try it ten days before you buy. If completely satisfied then send $4.95 and pay balance at rate of $5.00 per month for 5 months — No Interest or Carrying Charges Added. If not completely satisfied, return to us, no explanation necessary.

KAPNER HARDWARE, INC.
Dept. A-66, 2248 Second Ave., New York 29, N.Y.

Copyrighted material

GET INTO RADIO-TELEVISION ELECTRONICS by Shop-Method Home Training

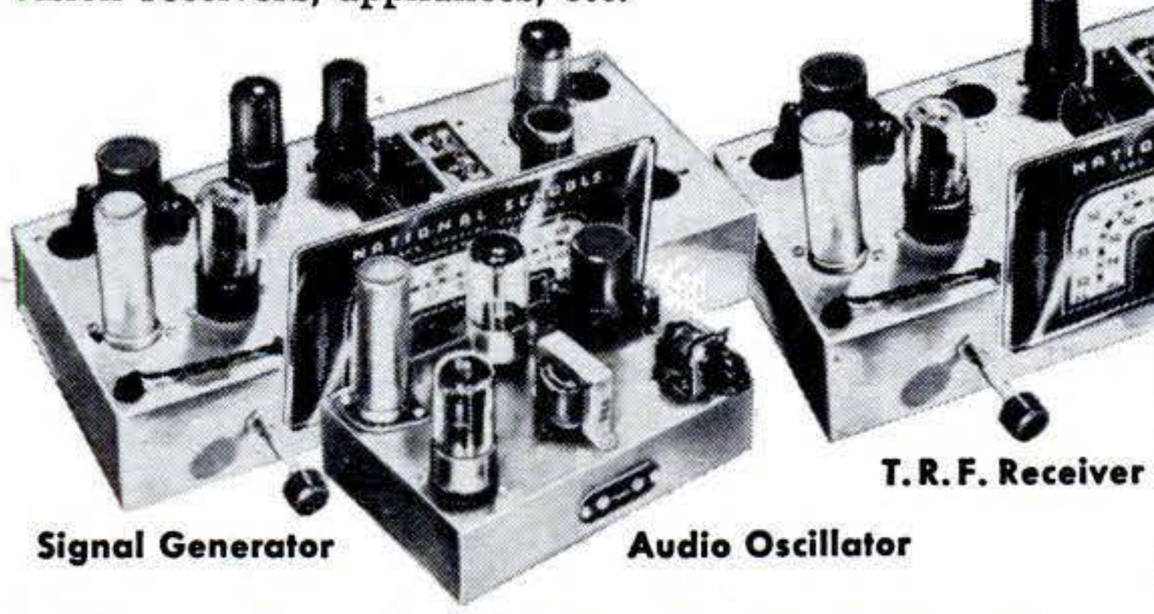
GOOD JOBS AWAIT THE TRAINED RADIO-TV TECHNICIAN

There is a place for *you* in the great Radio-Television-Electronics industry when you are trained as National Schools will train you at home!

Trained technicians are in growing demand at good pay —in manufacturing, broadcasting, television, communications, radar, research laboratories, home Radio-TV service, and other branches of the field. National Schools Master Shop-Method Home Training, with newly added lessons and equipment, trains you in your spare time, right in your own home, for these fascinating opportunities. OUR METHOD IS PROVED BY THE SUCCESS OF NATIONAL SCHOOLS TRAINED MEN, ALL OVER THE WORLD, SINCE 1905.

EARN WHILE YOU LEARN

Many National students pay for all or part of their training with spare time earnings. We'll show you how you can do the same! Early in your training, you receive "Spare-time Work" Lessons which will enable you to earn extra money servicing neighbors' and friends' Radio and Television receivers, appliances, etc.



Superheterodyne Receiver

T. R. F. Receiver

Signal Generator

Audio Oscillator

LEARN BY DOING

You receive and keep all the modern equipment shown above, including tubes and valuable, professional quality Multitester. *No extra charges.*

National Schools Training is All-Embracing

National Schools prepares you for your choice of many job opportunities. Thousands of home, portable, and auto radios are being sold daily—more than ever before. Television is sweeping the country, too. Co-axial cables are now bringing Television to more cities, towns, and farms every day! National Schools' *complete* training program qualifies you in all fields. Read this partial list of opportunities for trained technicians:

- Business of Your Own • Broadcasting
- Radio Manufacturing, Sales, Service • Telecasting
- Television Manufacturing, Sales, Service
- Laboratories: Installation, Maintenance of Electronic Equipment
- Electrolysis, Call Systems
- Garages: Auto Radio Sales, Service
- Sound Systems and Telephone Companies, Engineering Firms
- Theatre Sound Systems, Police Radio
- And scores of other good jobs in many related fields.

FREE! RADIO-TV BOOK AND SAMPLE LESSON!
Send *today* for National Schools' new, illustrated Book of Opportunity in Radio-Television-Electronics, and an actual Sample Lesson. No cost—no obligation. Use the coupon now—we'll answer by return airmail.

APPROVED FOR VETERANS AND NON-VETERANS
Check coupon below

Both Resident and Home Study Courses Offered!

TELEVISION TRAINING

You get a complete series of up-to-the-minute lessons covering all phases of repairing, servicing and construction. The same lesson texts used by resident students in our modern and complete Television broadcast studios, laboratories and classrooms!

NATIONAL SCHOOLS

LOS ANGELES 37, CALIFORNIA • ESTABLISHED 1905
IN CANADA: 193 E. HASTINGS STREET, VANCOUVER, B.C.

FIND OUT NOW—MAIL COUPON TODAY!

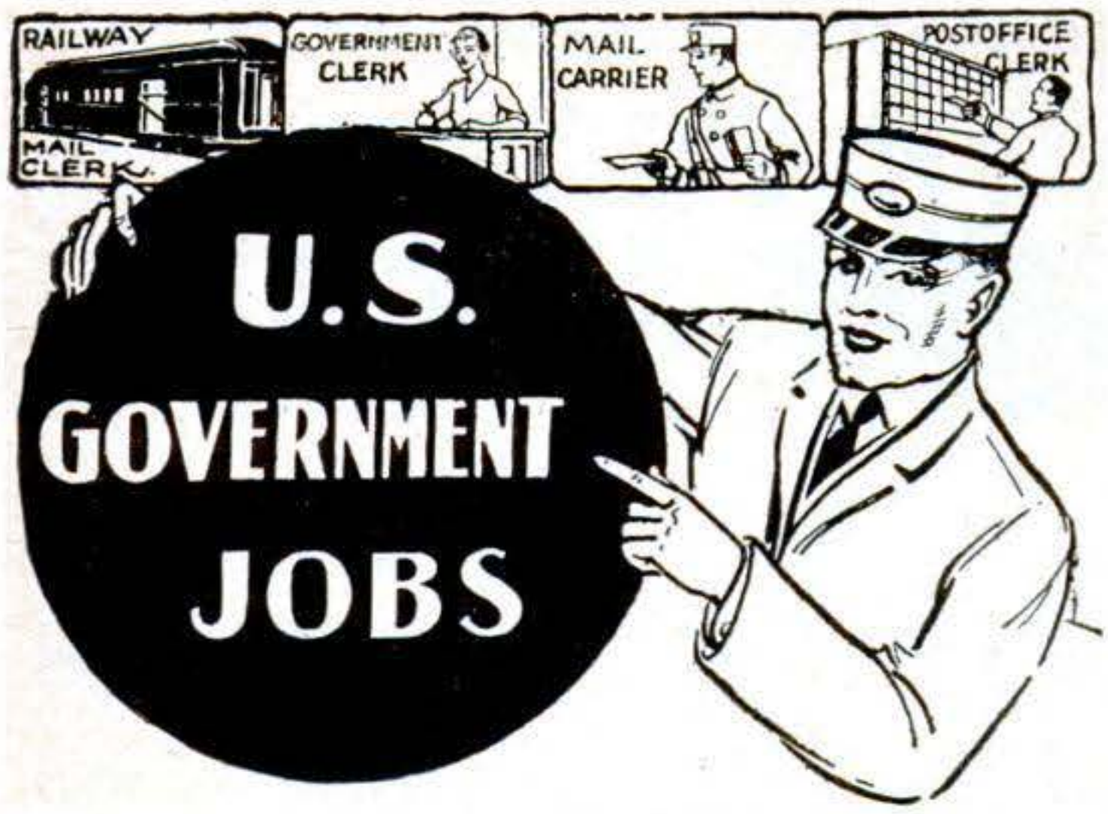
NATIONAL SCHOOLS, Dept. RC-23
4000 South Figueroa Street
Los Angeles 37, California

Mail in envelope or paste on postal card.

Send me FREE book "My Future in Radio-Television-Electronics" and the FREE sample lesson of your course. I understand no salesman will call on me.

NAME _____ AGE ____
ADDRESS _____
CITY _____ ZONE ____ STATE _____
☐ Check here if released from service less than 4 years ago.

Copyrighted material



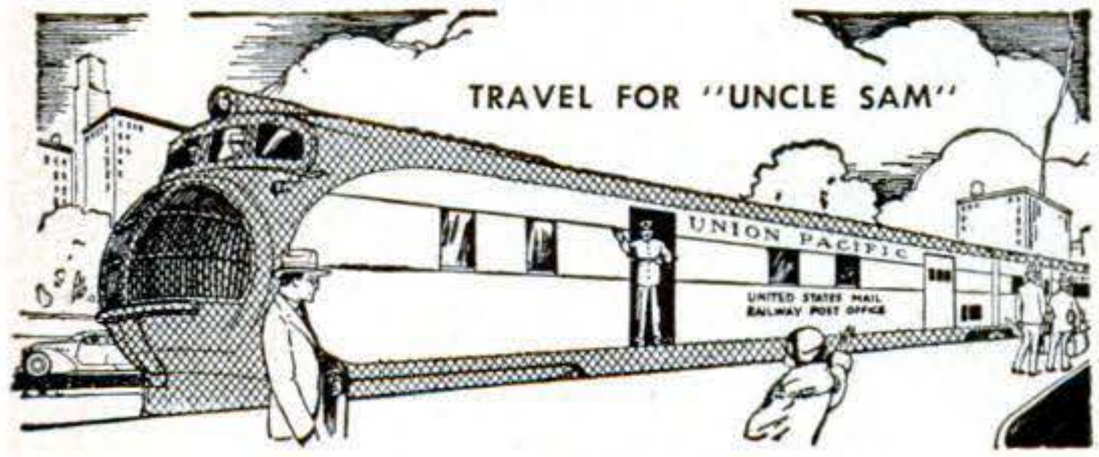
Start As High As $3,795.00 a Year

Get Ready Now for 1953 Examinations in Your Locality

Veterans Get Preference

City Mail Carriers, Post Office Clerks

Clerks and Carriers now get $3,270.00 the first year on regular and automatically increase $100 a year to $4,070.00. Open to men, women 18 to 50.



Railway Postal Clerks

Railway Postal Clerks get $3,470.00 the first year regular, being paid on the first and fifteenth of each month. ($144.58 each pay day.) Their pay is automatically increased yearly to $4,270.00. Advance may be had to Chief Clerk at $6,565.00 a year. $273.54 each pay day.) Men, 18 to 35.

3 Days On—3 Days Off—Full Pay

Railway Postal Clerks on long runs usually work 3 days and have 3 days off duty or in the same proportion. During this off duty their pay continues just as though they were working. They travel on a pass when on business. When they grow old, they are retired with a pension.

Many Other Positions

Many other positions are obtainable. Rural Carriers—Stenographers—Typists—Assistant Statistical Clerks—Customs Inspectors—Liquor Inspectors—etc. Those wishing these positions should qualify at once.

Get Free List of Positions

Fill out the following coupon. Tear it off and mail it today—NOW, at once.

Although not government sponsored this investment can result in your getting a big paid government job.

FRANKLIN INSTITUTE, Dept. T-80, Rochester 4, N. Y.

Rush to me, entirely free of charge (1) a full description of U. S. Government Jobs; (2) Free copy of illustrated 40-page book, "How To Get A U. S. Government Job"; (3) List of U. S. Government Jobs; (4) Tell me what to do to qualify for one of these jobs.

Name.....

Address..... Vet?.....

Use This Coupon Before You Mislay it. Write or Print Plainly.

LET ME START YOU IN A *new* SPARE TIME HOME SERVICE BUSINESS!

My Amazing Machine Brings In $7.00 for Every Dollar of Cost . . . Spare Time Start Can Lead to Independence!

Several years ago I saw an opportunity for a tremendous new industry and built a machine that made it possible for me to go into it. There had never been anything like it before. It was so successful that other men wanted my machine so that they could go into the same kind of business. It's a machine that cleans Venetian Blinds so fast that in a few evening hours one man—operating from his own home in basement or garage—can easily make from $50.00 to $100.00 in a single week. Others are doing it now without giving up regular jobs. Full time operators report incomes of $1,000.00 a month and more! No experience needed. We teach you everything including how to get customers by mail! Homes, offices, institutions, hotels all eager regular customers. Small down payment starts you in business and I let you pay as you grow—and to buy other machines on same liberal plan so you can expand as business booms! Opportunity for lifetime independence to those who get in now. Write for my plan at once. No obligation. No salesman will call. Get the amazing facts, investigate and then decide. Send name and address today and you can be in business next week!

Wm. Burtt, VENETIAN BLIND LAUNDRY EQUIPMENT CO.

442 N. Seneca St. Dept. 12-B Wichita 12, Kansas

$1 POST PAID ROLL-O-KITE

Amazing new spool-type kite spins as it flies. Unusual performance. Quick, easy to assemble. Fun to fly. Requires no tail or other complicated adjustments. Flies up to ¼ mile high. COMPLETE kit in colorful package includes all ready-cut parts, flying string, instructions plus hours of inspiring fun. Size 18 x 7 in. Choice—red, blue or yellow.

ROLL-O-KITE CO.
LOMITA, CALIFORNIA
P.O. BOX 182 ★ DEPT. 25

UNLIMITED OPPORTUNITIES IN ENGINEERING

DEGREE IN 27 MONTHS

Study Engineering in this world-famed school. Established 1884. Demand for our graduates exceeds supply. Approved for Korean Vets.
Bachelor of Science Degree in Mechanical, Civil, Electrical, Chemical, Aeronautical, Radio (Television) Engineering; Business Administration and Accounting. Also—36 weeks certificate courses in Surveying and Drafting.
Personalized Instruction. Accelerated courses. Non-essentials eliminated. For ambitious, earnest students. Earn your degree in the shortest possible time. Preparatory courses. Placement service.
Extensive Campus. Well equipped, new and modernized buildings; up-to-date labs. Low cost. New terms start quarterly. Enter March, June, September, January.

Mail Coupon Today

TRI-STATE COLLEGE

523 College Avenue, Angola, Indiana

Please send me free catalog and special information. I am particularly interested in courses as checked:

☐ Mechanical ☐ Civil ☐ Electrical ☐ Chemical ☐ Aeronautical
☐ Radio (Television) ☐ Business Administration ☐ Accounting
☐ Short Diploma Courses

Name.....

Address.....

Copyrighted material

YOUR QUESTION: **"I'm not satisfied with my present job...my pay...my future**

CAN I HAVE AN ART CAREER?"

"I like to draw. I may not be too good at it, but I'm willing to learn. Sure, I'll invest a reasonable amount of my spare time and money—where it will pay off soon. I'm looking for a future where age limits, educational background, seniority or prejudices won't hold me back. And frankly, the prestige, security and high pay of Commercial Art appeal to me. But the big question is this: Can I keep my present job—while I get a home-study Art training which is absolutely first-rate?"

MY ANSWER:

"I studied art at home SO CAN YOU"

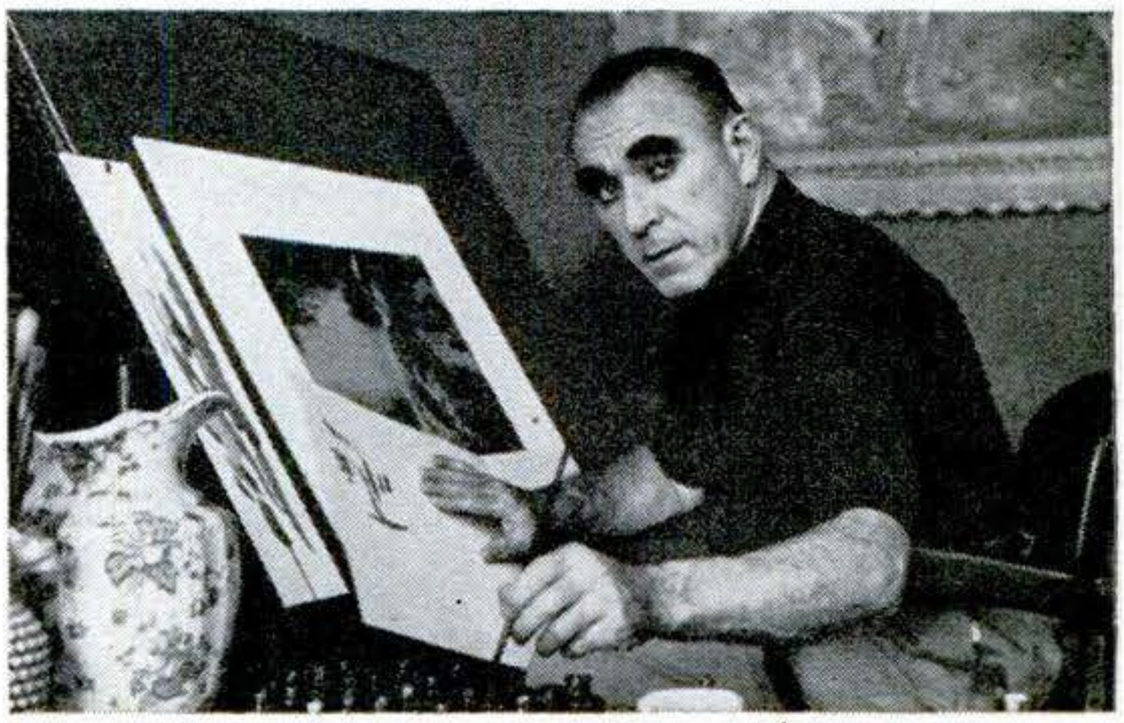
says **ALBERT DORNE,** one of America's highest-paid illustrators!

"If you want the sort of secure, well-paying Art Career you describe, there's a remarkable method of *personal* home study which has already proved spectacularly successful in hundreds of cases like yours!

You can prepare yourself *at home, in your spare time,* without giving up your present job! Soon *you* may be painting glamor girls and action pictures for magazines and calendars . . . creating posters, greeting cards, sketches for catalogs and store announcements . . . drawing pictures for advertisements that are seen and admired by everyone. And these are just a few of the possibilities!

Coast to coast, there's a great demand for well-trained $100-$200 a week artists. To take care of this need, America's 12 Most Famous Artists got together—and personally created what nationally-known authorities call "the greatest Art Course ever offered in any form." Then these 12 Famous Artists, myself included, created our own modern method of step-by-step *personal instruction through home study,* which allows you to get ahead as fast as you're able.

And not only do the 12 most successful artists in America place their easy-to-follow methods and secrets within your reach—but they show you how to get started on your career, and obtain the best prices for your Art work!

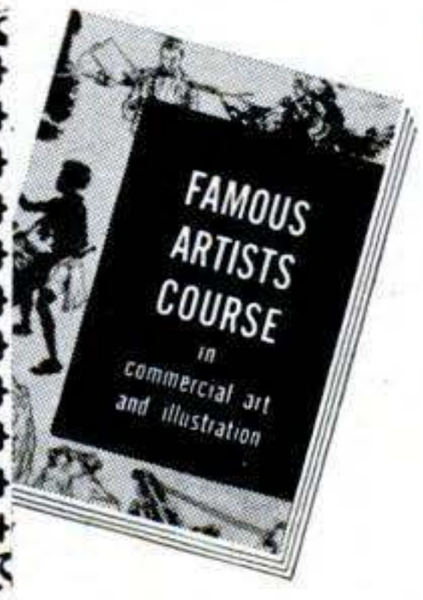


"If this is the kind of future you'd like to find out more about, let me know *now.* Remember, I studied Art at home—and so can you. For full information, mail the coupon below *today!*"

America's 12 Most Famous Artists Guide You Every Step of the Way!

Norman Rockwell • Al Parker • Jon Whitcomb
Ben Stahl • Stevan Dohanos • Robert Fawcett
Harold Von Schmidt • Austin Briggs • Peter Helck
John Atherton • Fred Ludekens • Albert Dorne

This coupon entitles you to our **FREE** 32-page booklet **If you mail at once!**



FAMOUS ARTISTS COURSE

(Attention: Mr. Albert Dorne) Studio 11-B3, Westport, Conn.

I'm interested in finding out how such famous Artists as Norman Rockwell, Stevan Dohanos, Jon Whitcomb and Al Parker can help ME learn every phase of art at home, in my spare time. Please send me, without cost or obligation, your FREE big, illustrated book about a money-making art career.

Name.....**Age**.....
Please Print

Address.....

City, Zone, State.....

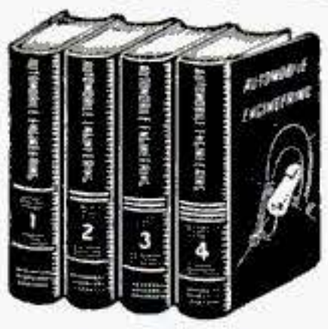
Copyrighted material

BETTER JOBS BETTER PAY FOR SKILLED MEN!

QUICK TRAINING BOOKS SHIPPED for Examination

SEND NO MONEY! Prepare for a better job at bigger pay by sending the coupon NOW for any set of easy-to-understand self-training text books. These great books, prepared by long experienced experts, can help you to acquire the "know how" that wins promotions and puts more money in your pocket. Any set of books sent for 10 days examination.

AUTOMOBILE ENGINEERING



4 Big, Thick Books
Over 2700 Pages

These wonder books tell how—step by step—to make the repairs and adjustments that keep any make of car at maximum operating efficiency. More than 2000 illustrations, wiring diagrams, data sheets, etc. **Total price only $18.50. Low monthly payments. Sent on trial.**

BUILDING, ESTIMATING and CONTRACTING

Up-to-Date Edition
9 Volumes—4000 Pages

These 9 practical books can help you to make more money by becoming foreman, superintendent, or running your own business. Drawing plans, estimating, masonry, carpentry, building, remodeling, heating, painting and many other subjects included. **2750 illustrations. Total price only $34.80. Low monthly payments. Sent on 10 days' trial.**

APPLIED ELECTRICITY

INCLUDING RADIO AND REFRIGERATION

19th Edition
8 Books—3700 Pages

This up-to-date edition contains many new subjects in detail, including blueprint reading, electronics, F.M. radio, fluorescent lighting and other modern electrical topics as well as full range of standard practices. 2700 illustrations. 134 tables. **Total price only $34.80. Low monthly payments. Sent on trial.**

Publishers since 1898

(A year's consulting privileges with our engineers now given with these books at no extra charge.)

AMERICAN TECHNICAL SOCIETY
Dept. X220 Drexel at 58th St. Chicago 37, Ill.

CLIP AND MAIL COUPON TODAY

AMERICAN TECHNICAL SOCIETY, Dept. X220
Drexel at 58th Street, Chicago 37, Ill.
Send for 10 days' free use, the following set of books:

I will pay the delivery charges only, and if fully satisfied, will send you $3.00 plus postage in 10 days and then $4.00 a month until the total price of $.....is paid. If I return the books in 10 days I will owe you nothing. You are to include a Year's Consulting Privileges with your engineers without extra charge.

Name.....

Address.....

City.....State.....

Please attach letter stating age, occupation and name and address of employer, and at least one business man's name and address as reference. Men in service also please give home address.

FIRST AID for BURNS

relief that's fast

Bactine BRAND Reg. U. S. Pat. Off.

- CHECKS PAIN
- HELPS PREVENT INFECTION - THUS HELPS HEALING
- CLEANSES BURNS GERMS
- GREASELESS • DOESN'T STAIN

REPLACEMENT OR REFUND OF MONEY — Guaranteed by Good Housekeeping — IF NOT AS ADVERTISED THEREIN

fresh clean odor

BATHE BURNS WITH **Bactine** BRAND Reg. U. S. Pat. Off.

CONSULT YOUR DOCTOR FOR SERIOUS BURNS
AT ALL DRUG STORES • 3 CONVENIENT SIZES
MILES LABORATORIES, INC., ELKHART, INDIANA

TRAVEL BY TRAILER AND ENJOY IT!

"FIFTH AVENUE ON WHEELS"
A Fascinating New Approach To Trailer Travel
By World-Famous Globe Trotter
WALLY BYAM

Here is a stimulating new book, packed with ideas, adventure and valuable information—everything you want to know about trailers and trailer travel. Wally Byam, pioneer trailer traveler and builder, sums up his 20 years experience, takes you to Europe, Mexico, Central America—tells you where and how to go and what you need. You will enjoy and treasure the interesting information...you will learn how to live and travel in a trailer the easy way. This book is a must for everyone who owns a trailer or has dreamed of owning one. Get your copy today!

$2 Postpaid—No C.O.D.'s please.
First copies will be autographed by the author

WALLY BYAM 1755 N. Main St., Los Angeles 31, Calif. Dept. P-2

100 Men Will Get More Pay This Week

IN a single 17-week period recently surveyed, 1973 I.C.S. students moved up to better jobs! Based on that figure, it means that an average of over 100 men will be promoted *this* week, due to I.C.S. training. If you're not satisfied with your present job and pay, find out what I.C.S. can do for YOU. Become an expert in your field. Prepare yourself at home, in spare time. Choice of 391 profitable subjects. Engineering, Chemistry, Art, Business, Radio and TV, etc. 203 instructors. COSTS ONLY A FEW CENTS A DAY.

2 FREE BOOKS. Write for free book; state subject that interests you. Also free, *"How to Succeed,"* 38 pages of valuable tips on how to get ahead faster. Just send your name, address. No obligation. International Correspondence Schools, Box 632-N, Scranton 9, Penna.

Yours for the asking—
No charge—no obligation

"How to Become a Mail Order Millionaire"

Read how Gilbert on a "peanut" investment built up to $350.00 A DAY. Learn how Zimmerman started a mail order business on a buck private's pay and spiraled $16.80 into a big yearly income. See how a Chicago clerk quit a $75.00 job and now makes $22,000 a year in his own Mail Order business. Read how a southern boy made a fortune selling war-surplus parachutes which he bought as he went along. All Free! Send name on coupon for a copy of this fascinating reprint of "How to Become a Mail Order Millionaire" from Mechanix Illustrated plus details on the L.W. Mail Order Survey.

Start on a SHOESTRING!

The real-life stories of success in Mail Order read like fairy tales. If I had not personally known these people their stories would be hard to believe. Yet they are not only true, but they represent just a few of the hundreds of "little operators" who have been swept into big money by Mail Order.

GAINES. I personally guided his start when he invented an automatic pants presser. He started with one little ad in one magazine. Four years later he retired — with enough real estate to keep him in cash income the rest of his life.

VAN MARK. I worked with him for six years. I met him when he was a wagon man for a tea and coffee house, knocking on doors. He went into Mail Order on nothing—made money from the start —ended up six years later with savings of $50,000 and an income of $5000.00 a year for life without further work.

DUGGAN. A few years ago he was a truck driver. Started fooling with Mail Order in a spare room in his spare time. Last year he said, "I don't know how much I'm worth—after you get the first million you quit keeping track."

MRS. NIXON. Started a small Mail Order business at home—just to keep occupied. It looked good and she came to me for advice. I showed her how to expand. In two years the business got so big her husband resigned his job to help manage it.

FOXMAN. Foxman worked as a hack writer at $70 a week. He had idle time in the evenings—ran an ad offering something he didn't have—got so many orders he had to find a source of supply. He made $18,000 the first year. He gives me credit for "showing the way."

JORGENSON. Consulted me about a specialty product. On my advice he ran one ad to "test" its saleability. That ad brought sales of $50,000. In his first year he did a business of nearly a half million dollars. His original investment was less than a thousand.

These things I have seen. These people I have helped to the realization of their dreams — these and hundreds of others. My own fortune was made in Mail Order. And now my secrets can be yours.

L. W.

Have you ever thought of running a profitable little sideline right from your home? Has it occurred to you that *you are just as capable as anyone else* of making money on a product or service that can be sold by mail? Have you ever looked into the Mail Order business as it's run (on tiny investments) by innumerable small operators?

Forget about Sears and Ward's! *Read about the "little fellows"* . . . clerks, teachers, vets, mechanics, salesmen and others . . . who are packing Mail Order items in bedrooms, spare rooms, attics, garages, cellars . . . dumping them in the Post Office . . . and quietly banking the fistful of Money Orders, cash and checks delivered, to them daily by the mailman.

An annual business of almost a billion dollars is done by "little fellows" who advertise and sell *just one item!* The Department of Commerce of the United States says, "A number of the most successful obtain incomes as high as $40,000 to $50,000.00."

It's an incredible story . . . a story of a business that's wide-open for newcomers . . . with opportunities for income far-and-away greater than you can ordinarily hope to attain by holding down a job. And in Mail Order you can stay as small as you wish—run your deal as a $50 or $75 weekly sideline—or consider jacking it up into really big figures as a full time operation.

Glance at the examples at left. *These true stories are far from unusual.* Multiply them by the hundreds and you begin to get an idea of what can be done . . . what *is* being done...in the phenomenal Mail Order field.

* * *

Yet, if you were to jump blindly into Mail Order your chances would be slim. A peculiar brand of "know-how" is vital in this little - known, little - understood business. *This is fortunate for you.* If any Tom, Dick, or Harry would "click" in Mail Order, the field would have been overloaded years ago.

But now you have the opportunity to learn the authentic secrets of successful Mail Order operation. They are revealed for the first time, step by step, in an extraordinary new Survey . . . *the L.W. Confidential Mail Order Letters.*

This Survey is not a course—not a book —not a group of lessons. It is a simple guide that anyone can follow. It shows you how to pick the right product for Mail Order. It shows you exactly how to start a profitable business *fast*, with cash or Money Orders in the envelopes you receive. It shows how to buy your product out of the very money you get in the mail, so you don't have to tie up cash in large supplies of your product. It gives you actual examples of ads and letters, *analyzed to show how and why they make money.* It demonstrates the months to start, the time to expand, the best way to get prospects' names. It reveals from A to Z the confidential facts that have made fortunes for Mail Order operators who use them.

Mail the coupon today, or simply send your name and address on a postcard. No salesman will call. We will mail, postage prepaid, a *Free* copy of "How to Become a Mail Order Millionaire" and along with it will give you complete facts about the L.W. Mail Order Survey. Read the facts. Then decide whether you would like to spend spare time or full time in a profitable, fascinating Mail Order enterprise. If you think you would like to follow the footsteps of hundreds of others who are now making good money in this way, you can get your L.W. Survey and begin at once.

Please don't decide to write us "a little later." Send your name *now*, before you forget. This one little act might be the first step to a future of independence and wealth.

The L. W. MAIL ORDER SURVEY, Dept. 32
7070 N. CLARK ST., CHICAGO 26, ILL.

The L. W. MAIL ORDER SURVEY, Dept. 32
7070 N. CLARK ST., CHICAGO 26, ILL.

Mail me a free copy of "How to Become a Mail Order Millionaire" and details about the L. W. SURVEY. It is understood there is no charge at any time, and that I am not under the slightest obligation. After reading, I will decide whether I want to use the L. W. Confidential Letters to help me start a Mail Order business at home.

NAME.....

ADDRESS.....

CITY.....ZONE.....STATE.....

Copyrighted material

DOES YOUR TV SET HAVE TO COST YOU FROM $25—$90 A YEAR FOR REPAIRS?

Not if you know a few simple things about your television set . . . not if you know when you really need a serviceman . . .

and when your trouble can be corrected with a minor, simple, safe adjustment you can make yourself . . .

You've seen a serviceman come in to work on your set. He taps this and twists that. Then he either replaces a tube, or makes an adjustment on a part. All he has to do is recognize and locate the trouble, and then make the correction.

You don't have to be a mechanical genius to be able to make many of these same adjustments on your set yourself. If you have ever put a new washer on your water faucet, or changed a tire on your automobile, or attached a new plug to an electric cord—you have enough "mechanical background" to be able to take care of all "nuisance repairs" yourself, and probably of most other things that go wrong with a set.

Amazing New TV Owner's Self Repair Book Takes the Mystery Out of TV Repairs

With the amazing new TV Owner's Self Repair Book, you can have a television expert at your side whenever you need it. Now, every time your set begins to flicker or jump, or becomes distorted or dissolved into lines or zags—a flick of the finger to the right page **SHOWS YOU EXACTLY WHAT CONTROL** knob to turn to correct the trouble in less than one minute! From now on, every time you're annoyed by "ghosts," snow or weak channel reception—the TV Owner's Self Repair Book shows you how to effect a quick 15-minute repair job that eliminates these faults and restores the set to perfect, movie-clear reception.

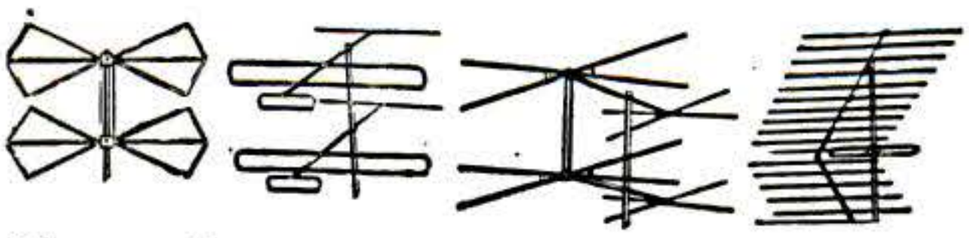
IT HAS BEEN PROVEN THAT 1 OUT OF EVERY 3 TV FAULTS IS CAUSED BY A WEAK OR BURNT OUT TUBE. Just by replacing a tube you can correct fully 33⅓% of the troubles that may develop in a set. The TV Owner's Self Repair Book shows you how to safely locate and change the bad tube in less than 5 minutes.

Contains special tube diagrams that spot faulty tubes immediately . . . a complete section on antennas . . . interference . . . covers T.V. set models from 1947-1952 . . . all makes . . . all sizes.

When you check your trouble and find that it is due to a faulty tube, you are led right to it. You simply find the diagram for your set and the one (or more) tubes you are to check—and **THE ONE TO REPLACE** are pinpointed for you! You are directed right to it. No blind guessing or hunting for the bad tube. **ONLY IN THIS BOOK,** has there been developed a special identification method to make it a cinch to locate the bad tube. Each tube in each diagram not only carries its usual trade identification number, but also a special letter to identify its function and location as well. It's (1) find the trouble, (2) find the tube, bingo, (3) replace the tube—and that's all there is to it!

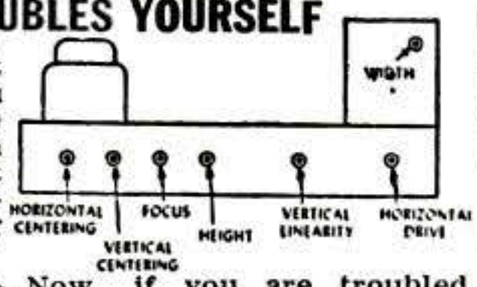
Which Type of Antenna Is Best for Your Set

The special chapter on antennas explains what an antenna is supposed to do; the reason for the different shapes and arrangements; the reason for "stacking" and multiple antennas; how to "orient" an antenna for best reception; the need and use of a "rotator"; the special antennas for "fringe" areas; how to install, change or add antennas and parts; information on complete antenna installation kits which are available. Just about everything practical that you need to know about antennas.



Do This Right Now and Prove You Can FIX TV TROUBLES YOURSELF

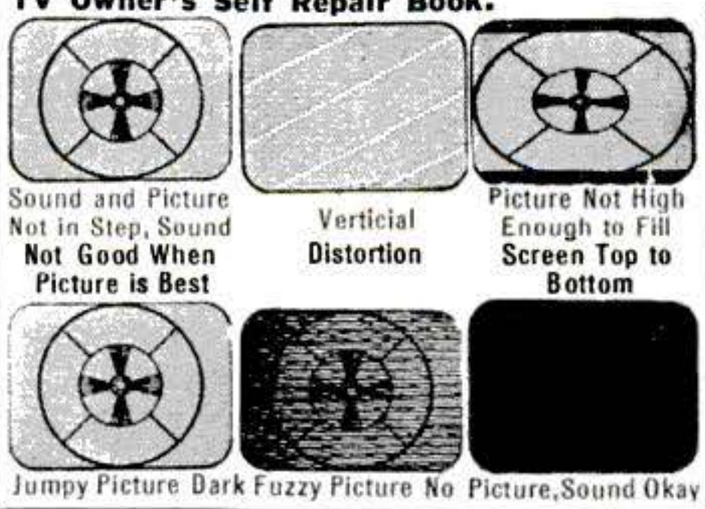
Turn your set around. You will find in the back of it an arrangement of "rear controls" looking like this:



Zags on Your Screen

Now, if you are troubled with these zags on your screen, locate Hor. Syn. on the above rear panel. Turn control slowly to left. Zags will disappear and you will have a perfect picture on your screen. That's all there is to it. You have made a $5 repair in less than 5 minutes.

A few other repairs that you can make yourself without tools, without any special knowledge, just with the help of this new TV Owner's Self Repair Book.

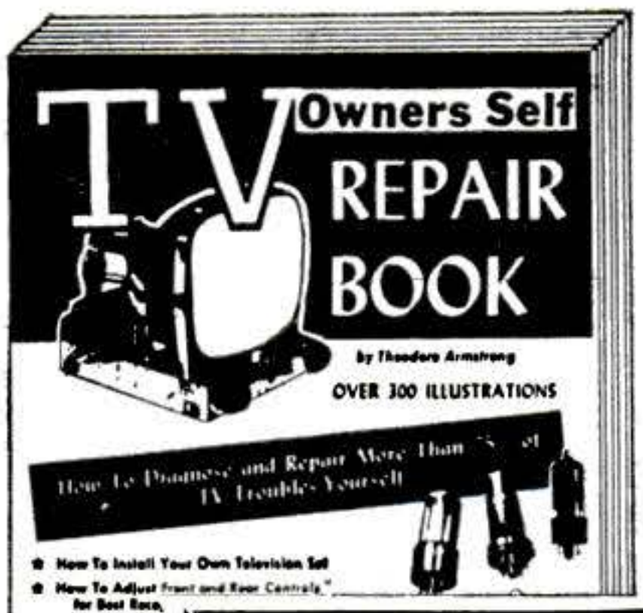


6 Easy Ways to Eliminate interference

In the TV Owner's Self Repair Book there is a unique chapter devoted just to elimination of interference. This chapter tells you just what "interference" actually is. It describes and illustrates the interference symptoms or patterns which appear on your screen in the form of diagonal lines, vertical lines, herringbone or hyphens all over the screen, etc. **This chapter gives you the easy ways to eliminate interference, doing it yourself in a few minutes.**

Complete Price Lists of All Tubes

The TV Owner's Self Repair Book contains a full listing of every tube used in TV sets, fully identified with number, and also listing of picture tubes and with the fair retail prices (by the way, prices range from $1.10 for a 5YEGT tube to **$6.60** for a 6CDG tube and up to $101.00 for a 24 inch picture tube, 24BF4). A full listing, also, of standard and reasonable charges for every type of television service and repair job. No longer need you be in the dark when it comes to knowing what a job should cost. Now you can make your own minor repairs and in addition know just how expensive "Expensive" repairs should really be.



A Practical Reference Book & Reading Course Combined in One Big Volume... for Only

An Amazing Bargain, Actual Size 6 x 9 Inches, 160 Pages, Over 300 Illustrations And How To Do It Pictures

$1.98

Never Before Such a Complete Authoritative Book for So Little Money!

It contains chapters devoted to GETTING ACQUAINTED WITH YOUR TV SET, telling you how the set is put together, how to understand the controls, how to operate the set, why a "test" pattern is needed—and HOW A TV SET WORKS, telling you how pictures and sound are broadcast and received. Included in the broad scope of this book, is complete information on HOW TO DIAGNOSE TROUBLES IN YOUR TV SET, telling you how to spot faults due to poor adjustment, faults due to wear and breakdown of tubes and parts, faults due to outside causes including extreme distance from telecasting center; also HOW TO CURE YOUR TROUBLES IN THE SET, telling you with pictures and descriptions just how to go about replacing tubes, parts, HOW TO MAKE VARIOUS ADJUSTMENTS and how to do all this without the slightest danger to yourself or to your set! There is also a special chapter devoted to television accessories, such as boosters, what they do, Interference, Traps, Glare Filters, Antenna Couplers, which means a master antenna system which permits the operation of two sets from a single antenna, and much, much more.

Unconditional Money Back Guarantee!

Let us send you a copy of this TV Owner's Self Repair Book. Look at it, go through it, read the general information it offers on how a TV set works. Use it to adjust the controls on your set to 100% perfection. Use it, above all, in making your next "fix-it" job on your set. Then—if you don't think that it is the best book of its kind on the market, that it will save you up to a possible $300 on repairs and adjustments on your set during its life, return it to us. We'll promptly send your money back. You must be satisfied 100% or it costs you nothing to examine and try the book—in your home on your set. What could be fairer? But send for the book now and enjoy the best television reception from your set right away!

SEND NO MONEY unless you wish

H. Sears Industries, Inc., Dept. 651
799 Broadway, New York 3, N. Y.

Please send me the TV OWNER'S SELF REPAIR BOOK immediately. I agree to pay postman on arrival $1.98 plus C.O.D. postage. If the book does not help me get a clearer, sharper, better defined picture than I am now getting—if the book doesn't make it possible for me to fix or repair my own set, if I am not 100% satisfied, I may return the book for my full money back!

NAME.....
(Please print plainly)
ADDRESS.....
CITY & ZONE.....STATE.....

☐ SAVE MORE! If you enclose $2 cash, check, or money order with this coupon, we pay all postage charges. Same unconditional money back guarantee!

Copyrighted material

TURN RIGHT

Get on the Road to a Better Job-Brighter Future with *RIGHT* Training

—then You Can Really GO!

AMERICAN SCHOOL, Dept. G246, Drexel at 58th, Chicago 37, Ill.

Without obligation, please send FREE and postpaid, full particulars about the subject checked below.

- ☐ Accounting
- ☐ Air Conditioning
- ☐ Architecture & Building
- ☐ Automotive Technician
- ☐ Better Foremanship
- ☐ Bookkeeping
- ☐ Business Management
- ☐ Contracting
- ☐ Diesel Technician
- ☐ Drafting—Building Trades
- ☐ Drafting—Machine Trades
- ☐ Electrical Engineering
- ☐ Electricity—Practical
- ☐ Electronics—Industrial
- ☐ High School Courses
- ☐ Machine Shop Operations
- ☐ Mathematics & Slide Rule
- ☐ Mechanical Engineering
- ☐ Plastics Engineering
- ☐ Plumbing—Practical
- ☐ Private Secretary
- ☐ Refrigeration
- ☐ Retail Merchandising
- ☐ Salesmanship—Outside
- ☐ Sheet Metal Work
- ☐ Tool Making

NAME..... OCCUPATION.....

HOME ADDRESS..... AGE.....

CITY..... STATE.....

START NOW by checking, filling in and mailing this coupon. You'll get full information — No cost, No obligation!

• *Today,* make the BIG decision of your life. Choose the career you want and take the first easy step toward your goal. Learn how you can get the training that can put you in the bigger pay class and give you security in the years ahead. Find out how, in spare time at home, you can qualify for work you prefer, and higher pay. Or if you are already in the work you like, find out how you can win quicker promotion and a larger income.

Backed by 55 Years of Training Know-How

Since 1897 American School has helped many thousands of ambitious people toward success by providing specialized training for commercial and technical advancement. Its study program for *you* has been prepared by experts in the subject you select and the school will give you guidance every step of the way. In time you might otherwise waste and at a cost you can afford you can prepare at home and really GO on the *right* road.

Don't Delay YOUR Start

Give serious thought to the list of training courses listed above. Pick the opportunity that interests you, check it and add your name and address. (Check more than one if you are undecided which appeals most.) Then clip and mail the coupon. Full information will be supplied without cost or obligation.

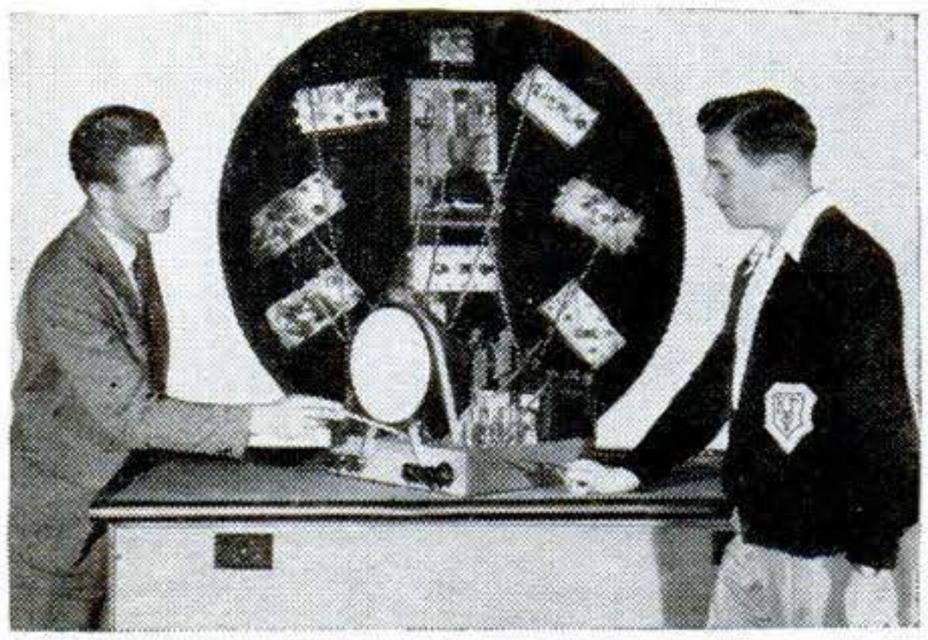
PRACTICAL, EFFECTIVE HOME STUDY TRAINING SINCE 1897

AMERICAN SCHOOL, Dept. G246, Drexel at 58th, Chicago 37, Ill.

THE SOONER YOU START, THE SOONER YOUR GOAL CAN BE REACHED

Copyrighted material

BECOME AN
Electrical Engineer



- **Major in Electronics or Power B. S. Degree in 36 months**
- **Television Technician Certificate in 18 months**

FOLLOW THIS PLAN
By 1954 there will be *at least* two positions for every engineering and technician graduate. Enter these opportunities early . . . earn your B. S. Degree in 36 months through optional year 'round study.

TELEVISION
TECHNICIANS are needed throughout America's fastest growing industry.
You become a Radio Technician in 12 months. In 6 additional months become a *Radio-Television Technician.* These Technician Courses are complete in themsevles and can be applied as *one-third* of the B. S. Degree program. Recent developments forecast unlimited opportunities for TV technicians and engineers.

Choose from these courses:
General preparatory course—3 months

SERVICE 6 to 12 months
- Electricity
- Welding
- Refrigeration
- Heating
- Radio-Television

TECHNICIAN 12 to 18 months
- Radio and Television
- Electronics
- Electrotechnics (Power)
- Mechanical Technician
- Welding
- Air Conditioning

ENGINEERING 36 months B.S. Degree
- Electrical Engineering Major in Electronics or Power
- Mechanical Engineering

TERMS OPEN APRIL, JULY, OCTOBER, JANUARY
Military, Practical, or Academic training evaluated for advanced credit. Faculty of specialists. Over 48,000 former students from all states and 23 overseas countries. *Nonprofit. Founded in 1903.*

MILWAUKEE
SCHOOL OF ENGINEERING

MILWAUKEE SCHOOL OF ENGINEERING
Dept. PS-253 1025 N. Milwaukee
Milwaukee 1, Wisconsin
Without obligation send Catalog for Electrical Engineering, B. S. Degree, major in ☐ Electronics; ☐ Power; ☐ "Your Career"; Occupational Guidance Bulletin on: ☐ Radio-TV ☐ Electrical Power ☐ Mechanical Engineering ☐ Welding ☐ Heating, Refrigeration, Air Conditioning ☐ Preparatory.

Name_____Age_____
Address_____
City_____Zone_____State_____
If veteran, indicate date of discharge_____

MONTH AFTER MONTH. YEAR AFTER YEAR, YOU SEE OUR AD. CHECK AND DOUBLECHECK BEFORE YOU BUY ANYWHERE!
1 Are these tires "Family-Safe"? Our families use them.
2 Are They Recaps? Ours are not (except passenger Snow-Tires)
3 Will I get Goodyear, U.S. & famous Brands? From Us, You Must!
4 Is the guarantee unconditional? See our fine offers below.
5 Can good tires be bought cheaper? It's dangerous to pay less.
6 Is a tube included free? Yes, we do. See OUR Free Tube Offer.

GOODYEAR Firestone

GOODRICH, U.S. & OTHERS SLIGHTLY USED. (NO NOT RECAPS) DOUBLE WARRANTY & UNCONDITIONAL GUAR. ON PASS. TIRES

Our policy is to select your tires so carefully, as if our very future depended on the service given by that particular tire.

FREE TUBE WITH EVERY GOOD GRADE, AND FINEST GRADE PASSENGER AND TRUCK TIRE.

GOOD GRADE 20 MONTHS GUARANTEE BOND

600-16	$4.02	820-15	$5.30	600-20	$6.92	32x6(8)	$8.50
650-16	4.40	700-15	4.22	650-20	7.52	32x6(10)	9.80
700-16	5.00	670-15	4.40	700-20	8.40	900-20	13.10
650-15	4.00	710-15	4.60	750-20	8.40	1000-20	13.62
760-15	4.90	550-19	6 54	825-20	13.92	1100-20	13.94

FINEST GRADE, 30 MONTHS GOLDEN RULE GUARANTEE BOND
THIS GRADE MADE THE "BLATT" NAME WORLD FAMOUS

600-16	$5.1[illegible]	700-15	$5.82	30 MONTH GUAR. TRUCK TIRES			
600-16(6)	5.92	475-19	5.08	700-15(6)	$9.92	700-20	$12.52
650-16	5.92	640-15	5.02	700-17	10.62	750-20	12.92
650-16(6)	6.92	670-15	5.22	750-16	9.62	750-20(10)	17.52
700-16	6.52	710-15	5.72	750-15	13.22	825-20	18.22
700-16(6)	8.72	760-15	5.92	750-17	11.52	900-20	17.22
750-16	7.02	800-15	6.62	700-18	15.82	1000-20	18.52
525-18	4.92	820-15	6.72	600-20	8.72	1100-20	18.52
550-17	4.52	760-16	6.62	650-20	11.22	1200-20	21.52
650-15	5.12	450-21	5.08	32x6(8)	11.60	1000-22	17.52
WHITEWALLS $1 EA. Extra				32x6(10)	13.42	1100-22	20.42

Buy the 'Right' Truck Tires for "Your" Job

Std. Guar. 20 Mos.		Rugged Guar. 32 Mos. Military Mud-Sno tread	
750-20 std	$10.08	750-20 rugg	$14.52
900-16 std	10.58	900-16 rugg	15.08
600-16 std	6.48	600-16 rugg	9.95
750-16 std	$13.52		
750-16 rugg	17.64		

Factory Retread Snow-Tires. 30-month Guarantee
"New Tire Traction" Goodyear, Firestone & Others

670-15 $8.50	600-16 $8.50	710-15 760-15	650-15 700-15	650-16 800-15 $11

BLATT BLATT BLDG., GIRARD & LANCASTER AVES. DEPT. PS, PHILADELPHIA 31, PA.
SEND CHECK OR MONEY ORDER & THIS AD.
Shipments RUSHED Down South, Far-West and Up North

EYE GLASSES *by* MAIL As low as $1.95

WRITE for FREE CATALOG with 14 LENS SAMPLE CARD
Thousands of Customers
Est. 1939

QUALITY READING-MAGNIFYING OR BIFOCAL GLASSES FOR FAR AND NEAR
ADVANCE SPECTACLE COMPANY. Inc.
537 S. Dearborn St., Dept. SP-2 Chicago 5, Illinois

REAL ESTATE
BE A BROKER

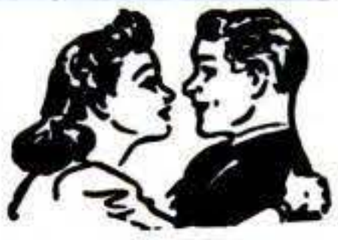
PAYS BIG! SEND FOR FREE, BIG, ILLUSTRATED CATALOG NOW! Graduates report making substantial incomes. Start and run your own business quickly. Men, women of all ages, learn easily. Course covers Sales, Property Management, Appraising, Loans, Mortgages, and related subjects. **STUDY AT HOME** or in classrooms in leading cities. Diploma awarded. Write TODAY for free book! No obligation.

FREE BOOK TELLS HOW

WEAVER SCHOOL OF REAL ESTATE (Est. 1936)
Suite 300 Law Bldg. Dept. PS Kansas City, Mo.

Ugly BLACKHEADS OUT IN SECONDS

Keep your complexion free of Blackheads this new way —look attractive instantly—or no cost.



Try VACUTEX Blackhead Remover

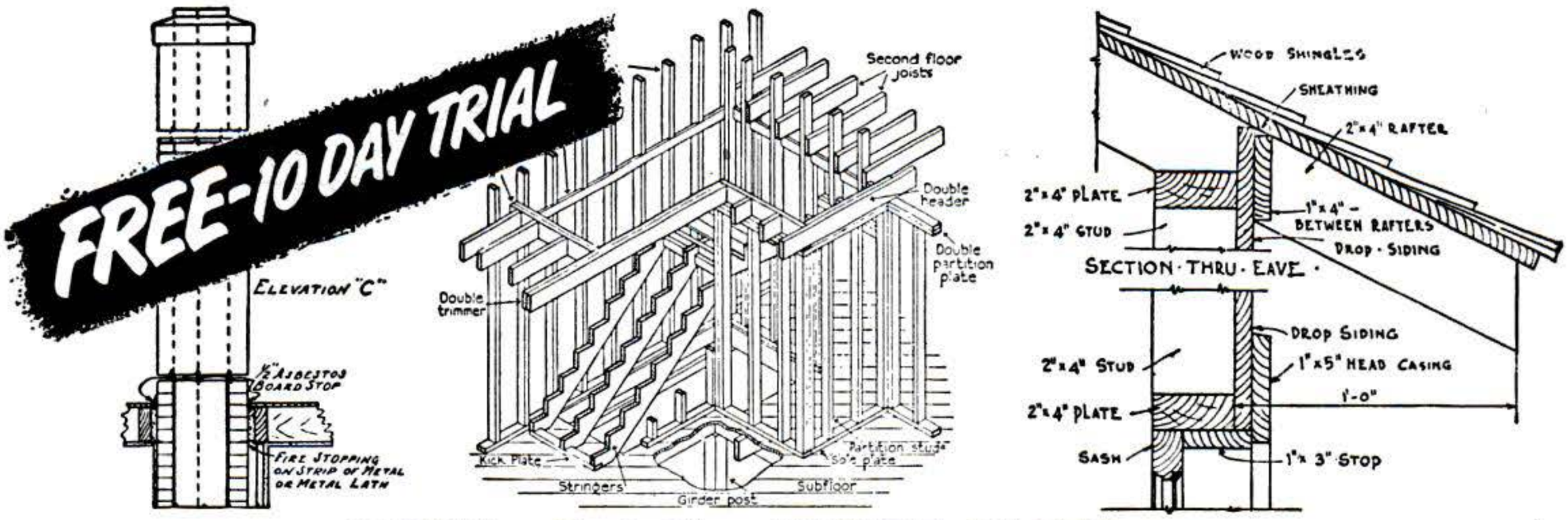
$1.00

10 DAY TRIAL COUPON

The amazingly effective Vacutex extracts Blackheads automatically—WITHOUT squeezing the skin or injuring tissues. Easy to use with three fingers. It reaches Blackheads anywhere. Try it 10 days and if not delighted, return VACUTEX and your dollar will be refunded.

BALLCO PRODUCTS CO., Dept. 80
19 West 44th St., N. Y. 36, N. Y.
☐ Enclosed find $1. Send postpaid.
☐ Send C.O.D. I will pay postman.

Copyrighted material



NOW—Get the INSIDE FACTS on

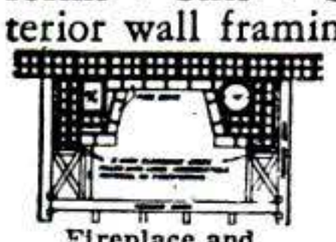
HOUSE CONSTRUCTION DETAILS

Save Money and Time—Get Better Construction—with these Professional Methods

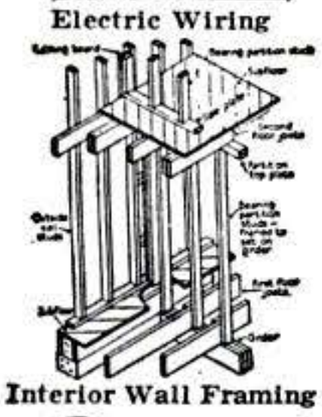
Here, at last, is an exact working guide on every detail of house construction from foundation to finish. Tells you dimensions, materials, processes, step-by-step working methods. Hundreds of scale drawings and photographs make every step easy to follow. Can be used for alterations in a set of stock plans, for making additions or changes in a building, or for complete construction of a dwelling. Conforms with modern practice and building regulations in all parts of the country. A book you will refer to for years! The professional guidance you get on even a single house construction detail can *repay you a hundred times the small cost* of this wonderful volume! Send for free-examination copy today. Mail coupon below.

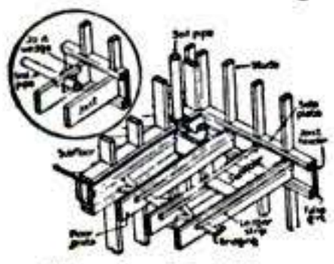
Every Step in House Construction Explained and Illustrated:

Excavations • Footings and drainage • Foundation forms • Sills • Girders • Joists • Sub-flooring • Exterior wall framing • Interior wall framing • Ceiling joists • Gable roof • Hip roof • Gambrel roof • Dormers • Siding and shingling • Cornices • Porches • Exterior walls of wood • Exterior walls of brick • Interior walls finished in plaster, in plywood • Wall panels • Mouldings for interior trim • Stair construction • Windows • Sash details • Window framing details • Doors and door trim • Hardware used in dwellings • Closets, shelves, built-in equipment • Breakfast alcove • Sewing room • Flooring • Chimneys and fireplaces • Mantels and seats • Outdoor fireplaces • Scaffolds • Garages • Electric wiring • Insulation • Arches and gates • Lattice porch and trellis • Picket fences • Log cabins, camps, cottages • Barns • Feeders and nests • Rabbit hutch • Septic tank • Painting and finishing • Heating systems • Air conditioning systems • Prefabricated houses • Useful information for home builders including architectural styles and data on modern building materials.


Fireplace and Chimney Details

Electric Wiring

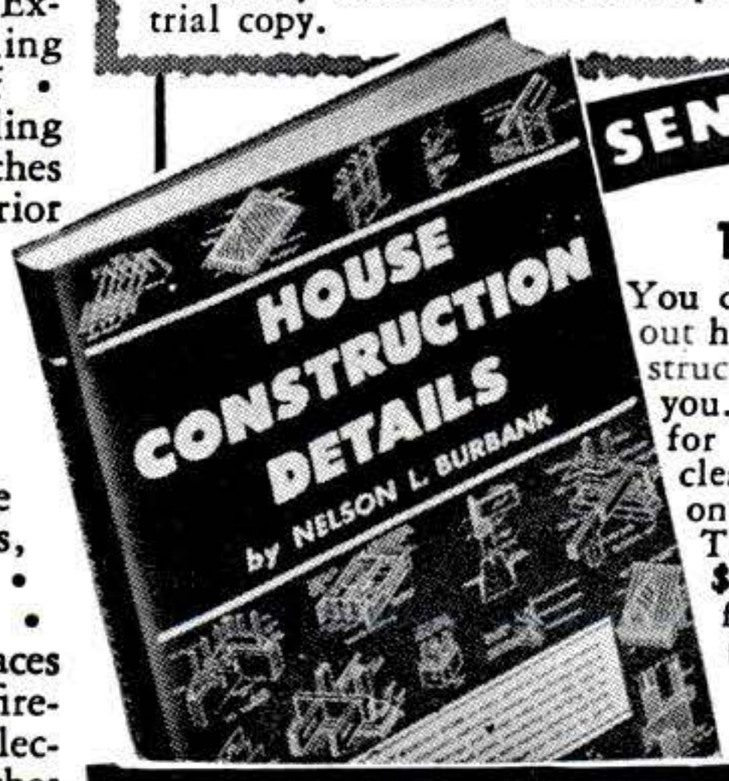

Interior Wall Framing


Flooring Details

NEW ENLARGED EDITION
385 PAGES, SIZE 8½ x 11. FULLY INDEXED. 2100 ILLUSTRATIONS.

The "How" Book of House Construction

Nothing Else Like It! Other books may show you *what* to build, but this is the book that shows you HOW to build! Every detail in the construction of a house is clearly described — illustrated with large, easy-to-follow drawings — indexed for ready reference. Send coupon below to get your free-trial copy.



SEND NO MONEY

Examine
10 DAYS FREE

You don't risk a penny to find out how valuable "House Construction Details" can be to you. Just mail coupon. See for yourself how you get clear, professional guidance on every building detail. Then either send only $4.95 (plus postage) in full payment, or return the book and owe nothing. Mail free-examination coupon NOW!

MAIL THIS COUPON

Simmons-Boardman Publishing Corp., PS-253
30 Church Street, New York 7, N. Y.

Rush to me at once, for 10 DAYS' FREE EXAMINATION, a copy of "House Construction Details." I will either return it in 10 days and owe nothing, or send only $4.95 (plus shipping charges) in full payment.

Name.....

Address.....

City & State.....

☐ SAVE! Send $4.95 with this coupon and we will pay postage. Same return and refund privilege.

Copyrighted material

CONCERT HALL SOCIETY

INVITES YOU TO ACCEPT THIS

Special Introductory Offer

ANY ONE OF THESE LONG-PLAYING RECORDS

Only $1.00

(WORTH $4.67 RETAIL)

BEETHOVEN

Piano Concerto No. 4 in G

OR MOZART

Symphony No. 41 *("Jupiter")*

OR CHOPIN

Sonata No. 2, op. 35 *(with "Funeral March")*

HERE is an extraordinary opportunity for music lovers! We will send you your choice of one of these delightful recordings—the Beethoven concerto brilliantly performed by the British pianist Mewton-Wood; the Mozart Symphony by the celebrated Winterthur Symphony Orchestra, and the Chopin sonata by the famous Chopin interpreter, Robert Goldsand. These recordings represent the ultimate result of the latest high-fidelity recording techniques—yet you may have any one of them for only one dollar!

We make this special offer to demonstrate the remarkable quality of Concert Hall high-fidelity recordings. We also send our free brochure telling how you can obtain our new series of recordings available nowhere else at any price!

Membership Limited to 3000

Only 3,000 members can own these limited-edition recordings; and right now only 275 subscriptions are still available. The whole interesting story is told in our free brochure, which we will send with the LONG-PLAYING record described above. Simply enclose one dollar with the coupon. If not delighted with the record, return it in five days and your dollar will be cheerfully refunded.

Concert Hall Society, Inc. **522**
507 W. 56th St., New York 19, N. Y.

I enclose $1. Please send me the high fidelity LONG-PLAYING record checked below. If not delighted, I may return it in 5 days for refund of my dollar. Also send, free, your brochure describing the new 1952 series of Limited Edition recordings.

☐ **BEETHOVEN** ☐ **MOZART** ☐ **CHOPIN**

(This special offer good only in U. S. A. and Canada)

Name .....
(Please Print Plainly)

Address .....

City.....Zone.....State.....

HI-SPEED COPE-SAW DRILL-BIT — DRILLS SAWS REAMS

INTERNATIONAL TWIST DRILL CORP.

DRILL, SAW, REAM . . . metal, pipe, wood, plastic, Transite, etc. Use with any electric drill, slow drill press, lathe or milling machine. Drills own starting hole—upper part of bit is used to cut, saw or ream circles, ovals, squares or scrolls. Easy to operate. Ideal for carpenters, mechanics, electricians, plumbers, hobbyists, many others. Abrasive resistant, high speed steel. Flutes ground from solid. Will withstand severe continuous use without breaking. Resharpened at no charge. Takes place of up to $50 in tools. ¼" diameter, 2" cutting sections, total length 3½". Also available specially designed for wood or metal and in 2⅜" and 1¾" lengths. Write for details. Specify all-purpose bit. Shipped same day. Money-back guarantee. Dealer inquiries invited.

SEND CASH, CHECK OR MONEY ORDER

Manufactured and distributed by:
INTERNATIONAL TWIST DRILL CORP.
618 Wyandotte, Rm. 690, Kansas City 6, Mo.

only $3.95 POST PAID

DEVELOP A STRONG HE-MAN VOICE

STRENGHTEN *your* voice this tested *scientific* way. Yes—you may now be able to improve the **POWER** of your speaking and singing voice—and in the privacy of your own room! Self-training lessons, mostly silent. No music required.

WRITE TODAY FOR FREE BOOK

Eugene Feuchtinger's great booklet "How to Develop a Successful Voice." It's absolutely FREE! You must state your age. Booklet mailed postpaid in plain wrapper. No salesman will call. Send your name, age now!

PREFECT VOICE INSTITUTE
210 S. Clinton St., Studio BX-1 Chicago 6, Ill.

MONEY for MEN ALL DATA FREE

THE PLASTEX Industry needs manufacturers on small scale and for big production of Lamp and Clock Stands, Art Goods and Novelties in Plastex and Marble imitation. Experience unnecessary. ½c material makes regular 10c store sellers. Rubber moulds furnished for speed production. Small investment brings good returns. We are now placing big chain store orders with manufacturers. Ambitious men have chance for real prosperity. Our Free booklet will interest and benefit you.
PLASTEX INDUSTRIES, Dept. 2, 3400 Third Ave., New York 56, N. Y.

ANOTHER RAISE!

Men and women often report two pay raises—sometimes *three*—while studying with I. C. S. That's just the beginning! You'll be amazed how fast you progress, how quickly you can master any one of 391 fascinating subjects. Personalized instruction by mail. Low cost. Courses tailored to your needs—whether unskilled or executive. Easy-to-follow texts. Diplomas to graduates.

FREE 36-PAGE BOOK! "How to Succeed." Also free big catalog on course that interests you.

INTERNATIONAL CORRESPONDENCE SCHOOLS
Dept. 7636-N, Scranton 9, Pa.

Please send free success book plus catalog on course checked:

☐ Aeronautics ☐ High School ☐ Accounting
☐ Automobile ☐ Commercial Art ☐ Mechanical Engineering
☐ Drafting ☐ Business Administration ☐ Electrical Engineering
☐ Practical Electrician ☐ Architecture ☐ Radio-TV-Electronics

☐ Other subject _____

Name _____ Age _____

Address _____

Copyrighted material

GET INTO AUTOMOTIVE DIESEL AND ALLIED MECHANICS

by Shop Method Home Training

JOBS LIKE THESE ARE OPEN TO YOU AS A TRAINED ENGINE MECHANIC . . . CHOOSE THE FIELD YOU LIKE BEST!

Get *complete* training

Diesel Fuel Injection
Automotive Motor Tune-up
Diesel Engine Maintenance
General Garage Mechanics
Agricultural Implements
Auto Engine Rebuilding • Auto Elec. Service
Public Utilities • Parts Dealers
Bus & Truck Lines • Industrial Maintenance
Contracting & Excavating
Business of Your Own
AND MANY other similar openings

EARN WHILE YOU LEARN

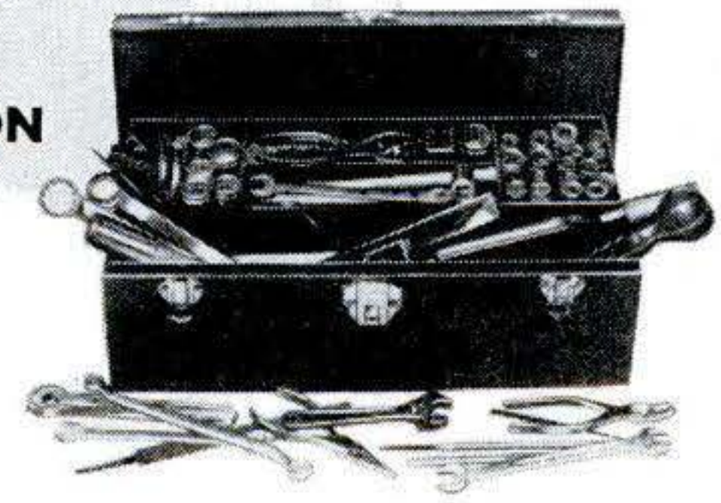
With our practical Master Shop-Method Home Training, you study at home in your spare time. You receive Spare Time Work Lessons, which show you how to earn while you learn . . . for extra money and experience. You Learn by DOING.

YOU RECEIVE AND KEEP ALL THIS MATERIAL:

- Basic Lesson Texts
- Diesel Installation
- Operation—Maintenance
- Diesel Chart Manual
- Spare Time Lessons
- Engine Service Manuals
- Engine Repair
- Drive Systems
- Diesel Electric Power
- Thermodynamics

TOOLS AND EQUIPMENT

INVESTIGATE! SECURE FULL INFORMATION



WE GIVE YOU TOOLS OF YOUR TRADE

Master All Phases!

Get Master Shop-Method Home Training from an Established Resident School with its own Training Shops and Laboratories—and almost 50 years of Successful Experience in Training Men.

We Bring National Schools To You

National Schools trains you for all opportunities in the dynamic, fast-growing Automotive-Diesel and Allied Industries. *You get complete training for this great Industry.*

Thousands upon thousands of autos, trucks, tractors, ships, trains, farms and factories are dependent upon engine power! Trained engine mechanics are needed in the Armed Forces as well as in civilian production. This huge field needs trained men for servicing, repairing, installing, operating and manufacturing equipment. The pay is good, the future excellent! National Schools offers you a *practical, all-embracing* Automotive-Diesel Mechanics Course that qualifies you for your choice of many good jobs.

Your National Course covers Gasoline and Special Fuel Engines; Diesels, High Speed and Heavy Duty; Semi-Diesels; Allied Mechanics.

APPROVED FOR VETERANS AND NON-VETERANS
Check Coupon Below

BOTH RESIDENT AND HOME STUDY COURSES OFFERED

Free Book and Sample Lesson Show You How

Send today for National Schools' new, illustrated Book of Opportunity in Automotive, Diesel and Allied Mechanics, and an actual sample lesson. No cost — no obligation. Use the coupon now — we'll answer by return airmail.

NATIONAL SCHOOLS LOS ANGELES 37 CALIFORNIA

IN CANADA: 193 HASTINGS ST., VANCOUVER, B. C.

TECHNICAL TRAINING SINCE 1905

FIND OUT NOW...MAIL COUPON TODAY

NATIONAL SCHOOLS, Dept. DC-23
4000 South Figueroa Street
Los Angeles 37, California

(Mail in envelope or paste on postal card)

Mail me FREE the book "MY FUTURE IN AUTOMOTIVE-DIESEL AND ALLIED MECHANICS," together with the FREE Sample Lesson. I understand no salesman will call on me.

NAME_____ AGE____

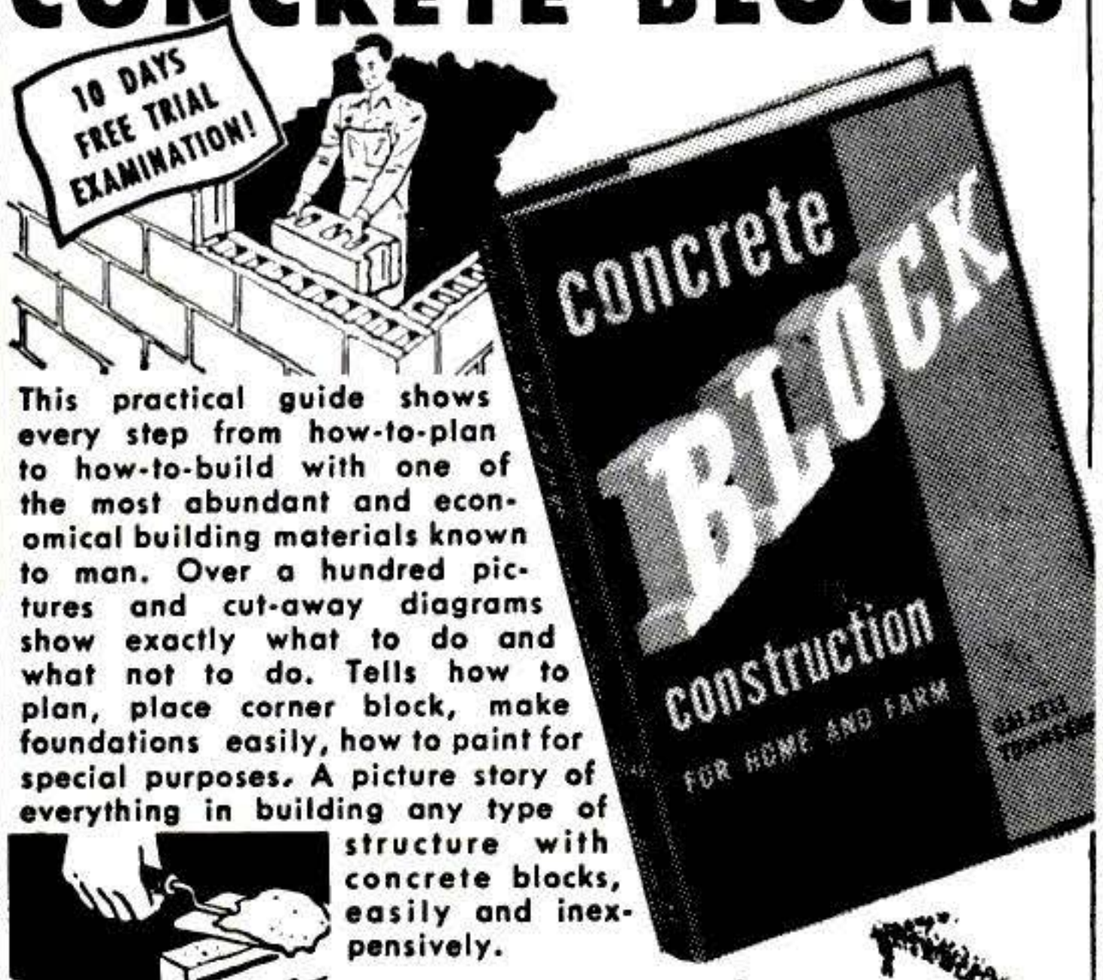
ADDRESS_____

CITY_____ ZONE____ STATE_____

☐ Check here if released from service less than 4 years ago.

Copyrighted material

NOW YOU CAN BUILD IT WITH CONCRETE BLOCKS

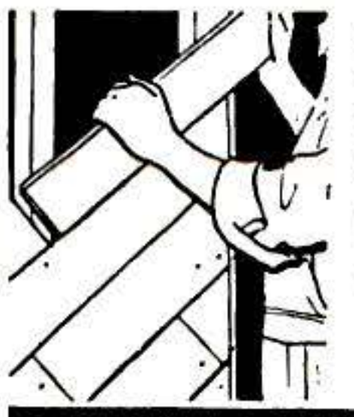


This practical guide shows every step from how-to-plan to how-to-build with one of the most abundant and economical building materials known to man. Over a hundred pictures and cut-away diagrams show exactly what to do and what not to do. Tells how to plan, place corner block, make foundations easily, how to paint for special purposes. A picture story of everything in building any type of structure with concrete blocks, easily and inexpensively.

Here's how to apply Mortar

Here's how little this book costs you . . or if you don't keep it after 10 days trial, return it and you owe nothing. $2.75

CARPENTRY FOR EVERYONE



A clear explanation of modern carpentry construction including framing, roof constructions, general carpentry work, exterior and interior finish of buildings, building forms and working drawings, and farm buildings. Covers everything you need to know about lumber, tools, joints and splices, floors, stairs, partitions, rafters, etc. Gives short cuts and tricks used by the master carpenter. Easy to understand. 504 pages, 580 illustrations. **$2.50.** Use 10 day no-cost trial coupon below.

BRICKLAYING — WIRING — PLUMBING

Bricklaying Skill and Practice shows by clear explanations and actual on-the-job illustrations, simplifies the construction of everything from fireplaces to complete buildings. **$3.00**

Electric Wiring—New book covers job-tested methods of residential and farm wiring, code changes. Show-how for amateur, valuable reference for tradesman, estimator, contractor. **$3.95**

How to Design and Install Plumbing—Hundreds of how-to-do-it pictures, full-sized blueprints for most every plumbing job. 349 illustrations, 422 pages. **$3.95**

OTHER YOU-CAN-DO-IT BOOKS IN COUPON BELOW

Mail this coupon today—10 days trial at no cost to you

American Technical Society, Dept. C-220
848 East 58th Street, Chicago 37, Illinois

Please rush me the following books I'm checking below to examine at home. If I'm not convinced these books will help me save thousands of dollars by doing my own building and planning, I may return the books and owe nothing.

Examine at home or no cost.

- ☐ CONCRETE BLOCK CONSTRUCTION FOR HOME AND FARM.....$2.75
- ☐ CARPENTRY.....$2.50
- ☐ BRICKLAYING..Skill and Practice...$3.00
- ☐ HOW TO DESIGN AND INSTALL PLUMBING.....$3.95
- ☐ ELECTRIC WIRING—Residential and Farm.....$3.95
- ☐ How to Insulate Home & Farm Bldgs...$3.00
- ☐ Steel Square.....$2.25

Name_____

Address_____

City_____ State_____

☐ Ten day no-cost-trial. If I keep books, will remit by check or money order.
☐ Send C.O.D. Same return privilege—money refunded.
☐ I'm enclosing $_____now to save postage—same return privilege—money refunded.

Pocket-Size ADDING MACHINE

ONLY **$1.49**

Adds-Subtracts Multiplies-Divides

EASY—QUICK—ACCURATE

Calculates 9,999,999

Simple to use! Operates with a flick of the finger. As accurate as machines costing many times this amazing low price. A practical machine—NOT A TOY. Sturdily constructed, fully guaranteed. Saves money and time in avoiding calculating errors. Ideal for offices, clerks, farmers, schools, and other personal uses such as keeping scores; canasta, golf, etc.

SEND NO MONEY —Just Mail Order. Pay postman only $1.49 plus postage and COD fee on delivery. Or send $1.50 with order and we pay postage. Use 10 days. If not delighted, return for money back. ORDER NOW!

RAY CALCULATOR CO. 259 STRADER AVE., DEPT. S-230 CINCINNATI 26, OHIO

P. O. BOX 791-DV

JUST OUT— 1953 EDITION

Tandy's new 64 page Instruction Book and Leathercraft Catalog. How to make 50 items, including lacing, braiding, plaiting, etc.

Write for FREE Catalog.

TANDY LEATHER COMPANY
FORT WORTH, TEXAS

ENGINEERING DEGREE IN 27 MONTHS

Big Demand for Graduates

AERONAUTICAL, CHEMICAL, CIVIL, ELECTRICAL, MECHANICAL and RADIO ENGINEERING (inc. TV and Electronics).

Hundreds of young men are earning **B.S. ENGINEERING DEGREES** annually in this recognized institution—year around operation. New terms start quarterly. Many students earn a major part of their college expenses in this large industrial center.

Low tuition. Competent instruction. Thorough, intense, practical program. Modern, well-equipped laboratories including new physics laboratory and modern wind tunnel. Individualized instruction emphasized.

Gov't approved for G.I.'s. Engineering preparatory courses. Students from 48 states and 21 foreign countries. Enter March, June, September, December.* Send coupon for free catalog and full information. Enroll now.

SEND COUPON TODAY

INDIANA TECHNICAL COLLEGE
623 E. Washington Boulevard
Fort Wayne 2, Indiana

Please send me free information on B. S. Engineering degree in 27 months as checked.

☐ Aeronautical, ☐ Chemical, ☐ Civil, ☐ Electrical, ☐ Mechanical, ☐ Radio-Television.

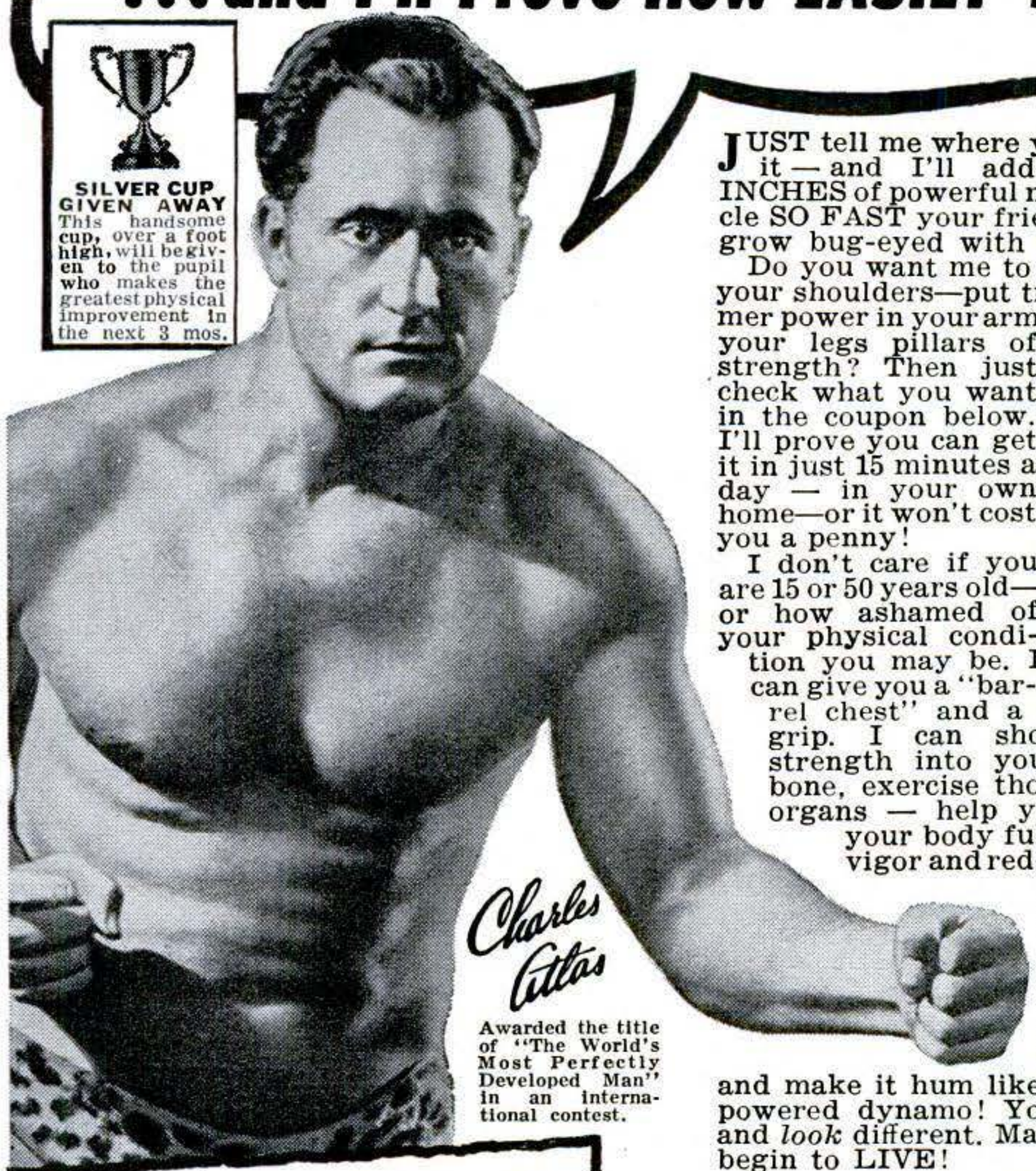
Name.....

Address.....

Copyrighted material

Check the Kind of Body YOU Want! RIGHT IN THE COUPON BELOW

...and I'll Prove How EASILY You Can Have It!



SILVER CUP GIVEN AWAY
This handsome cup, over a foot high, will be given to the pupil who makes the greatest physical improvement in the next 3 mos.

Charles Atlas

Awarded the title of "The World's Most Perfectly Developed Man" in an international contest.

JUST tell me where you want it — and I'll add SOLID INCHES of powerful new muscle SO FAST your friends will grow bug-eyed with wonder!

Do you want me to broaden your shoulders—put trip-hammer power in your arms—make your legs pillars of strength? Then just check what you want in the coupon below. I'll prove you can get it in just 15 minutes a day — in your own home—or it won't cost you a penny!

I don't care if you are 15 or 50 years old—or how ashamed of your physical condition you may be. I can give you a "barrel chest" and a vise-like grip. I can shoot new strength into your backbone, exercise those inner organs — help you cram your body full of pep, vigor and red-blooded vitality! I'll wake up that sleeping energy of yours and make it hum like a high-powered dynamo! You'll *feel* and *look* different. Man, you'll begin to LIVE!

ARE YOU
Skinny, Weak and run down?
Always tired?
Nervous?
Lacking in confidence?
Constipated?
Suffering from bad breath?
Fat and flabby?
Do you want to lose or gain weight?
WHAT TO DO ABOUT IT is told in my FREE BOOK

WHAT'S MY SECRET?

"DYNAMIC TENSION"! That's the ticket! The identical natural method that I myself developed to change my body from the scrawny skinny chested weakling I was at 17 to my present superman physique! Thousands of fellows are becoming marvelous physical specimens — my way. I give you no gadgets or contraptions to fool with. When you develop your strength through *"Dynamic Tension"* you can laugh at artificial muscle-makers. You simply utilize the *dormant* muscle-power in your own God-given body—watch it increase and multiply double-quick into real solid LIVE MUSCLE.

My method — *"Dynamic Tension"* is so easy! Spend only 15 minutes a day in your own home. From the very start you'll be using my method of *"Dynamic Tension"* almost unconsciously every minute of the day—walking, bending over, etc—to BUILD THE MUSCLE and VITALITY you want. And *you'll* be using the method which many great athletes use for keeping in condition—prize fighters, wrestlers, baseball and football players, etc.

FREE Illustrated 32-Page Book. Just Mail the Coupon.

SEND NOW for my famous book, "Everlasting Health and Strength." (Over 3½ MILLION fellows have sent for it already.) 32 pages, packed with photographs and valuable advice. Shows what *"Dynamic Tension"* has done for others, answers many vital questions.

This book is a real prize for any fellow who wants a better build. Yet I'll send you a copy absolutely FREE. Rush coupon to me personally: Charles Atlas, Dept. 12, 115 East 23rd St., New York 10, N. Y.

Here's The Kind of Results I Give:

"I gained 11 lbs. and 4¼ inches on my chest, 3 inches on my arms. I am never constipated."
—Henry Neven, Canada

"I gained 34 lbs. and increased my chest 6 inches."
—Stanley Lynn, Calif.

"What a difference! Have put 3½ inches on my chest (normal) and 2½ inches expanded."
—F. S., New York

"Gained 29 pounds. When I started your course I weighed only 141. Now I weigh 170."
—T. K., New York

"The benefits are wonderful. The first week my arm increased one inch, my chest two inches."
—E. M., Conn.

"You changed me" from a weakling to a real he-man. My chest has gone up 6 inches. I am a solid mass of muscle. Friends and doctors have noticed a great change in me."
—J. W., Montana

RUSH COUPON FOR FREE BOOK

CHARLES ATLAS, DEPT. 12,
115 East 23rd St., New York 10, N. Y.

Dear Charles Atlas: Here's the kind of Body I Want:

(Check as many as you like)

- ☐ More Weight—Solid—In The Right Places
- ☐ Broader Chest and Shoulders
- ☐ More Powerful Arms and Grip
- ☐ Slimmer Waist and Hips
- ☐ Better Regularity, Digestion, Clearer Skin
- ☐ More Powerful Leg Muscles
- ☐ Better Sleep, More Energy

Send me absolutely FREE a copy of your famous book "Everlasting Health and Strength"—32 pages, crammed with photographs, answers to vital health questions and valuable advice. I understand this book is mine to keep and sending for it does not obligate me in any way.

NAME.....AGE.....
(please print or write plainly)

ADDRESS.....

CITY.....STATE.....

Copyrighted material

CAPTURE ALL THE *Color...*

WITH A GRAFLEX® CIRO 35

only range-finder "35" UNDER $50!

with f/3.5 lens $49.05... f/2.8 lens $89.50

Own a Ciro 35—and a whole new world of photo fun opens up. You can make gorgeous color slides, inexpensively too! Range-finder and scale focusing make fuzzy results virtually impossible. And that's only part of the story. Built-in flash synchronization, coated lens, film counter, and no-tear film wind (exclusive in this price class!) all help the Ciro 35 add up to the best "35" buy in '53!

YOUR KIT FOR LOW-COST COLOR!

Complete with flash and ever-ready case: With f/3.5 lens... only $61.40

Prices subject to change.

GRAFLEX® *Prize-Winning Cameras*

Graflex Inc., Dept. 25A
Rochester 8, New York
Please send me literature on the Ciro 35.

Name _____

Street _____

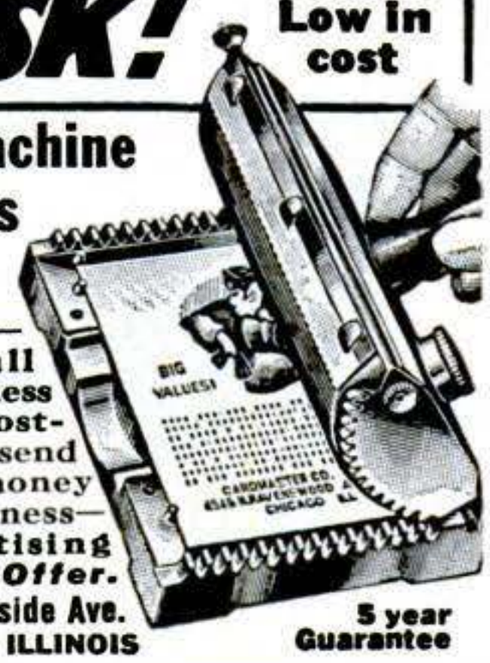
City _____

County or Zone _____ *State* _____

TRY 30 DAYS AT OUR RISK!

Low in cost

New Advertising Machine Prints and Illustrates Gov't Post Cards



FREE Send name—learn how all types of business are boosting sales with Post-card Advertising. We'll also send **FREE** illustrated book of money making ideas for your business—complete, unique advertising plans—and ***30-day Trial Offer.***

CARDMASTER CO., 1920 Sunnyside Ave.
Dept. 162 CHICAGO 40, ILLINOIS

5 year Guarantee

KOREAN VETS!

Now you can attend one of the world's most famous aeronautical colleges under Public Law 550.
B.S. degree in 3 yrs. from Saint Louis University — Aero. Eng., Maint. Eng., Aero. Adm.
Write today for full details

PARKS COLLEGE DEPT. S-23 EAST ST. LOUIS, ILL.

FREE! IMPORTS

To New Members

FROM FOREIGN LANDS

Free to new members of the International Traders Guild—many unusual, useful products from France, Japan, Germany and other foreign lands, and trade bulletins listing hundreds of import bargains to sell at high U. S. prices. Also requests from overseas buyers for U. S. exports. Opportunity, men—women, profitable, world-wide, mail order business at home; or travel abroad; no capital needed. 2,000 members in 42 countries. 7th successful year. FREE details. Mellinger Co., Suite 242, 1717 Westwood, Los Angeles 24, Calif.

When Writing to Advertisers Please Mention Popular Science

MORE JOBS WAITING—MORE WAGES PAID

BODY & FENDER REBUILDING

Get into automotives—America's No. 1 field. Thousands of trained men needed. You train at home—earn cash as you study. Free job service. *Mail coupon today*—no obligation.

COMMERCIAL TRADES INSTITUTE
1400 Greenleaf Ave., Chicago 26, Ill. Dept. BF 1-2
Send valuable free booklet on course checked:

☐ AUTO BODY & FENDER Rebuilding ☐ Television ☐ Refrigeration
☐ Upholstering ☐ Foremanship
☐ Auto Mechanics ☐ Drafting ☐ Factory Mngt.
☐ Diesel Mechanics ☐ High School ☐ Building Constr.

Name..... Age.....
Address.....
City..... State.....

Copyrighted material

AMAZING NEW TRAINING PLAN

Leonard C. Lane, B.S., M.A.
President of Radio-Television Training Association,
Exec. Dir. of Pierce School of Radio and Television

THOUSANDS OF BETTER PAY JOBS IN TELEVISION

I PREPARE YOU *AT HOME* WITHIN MONTHS!

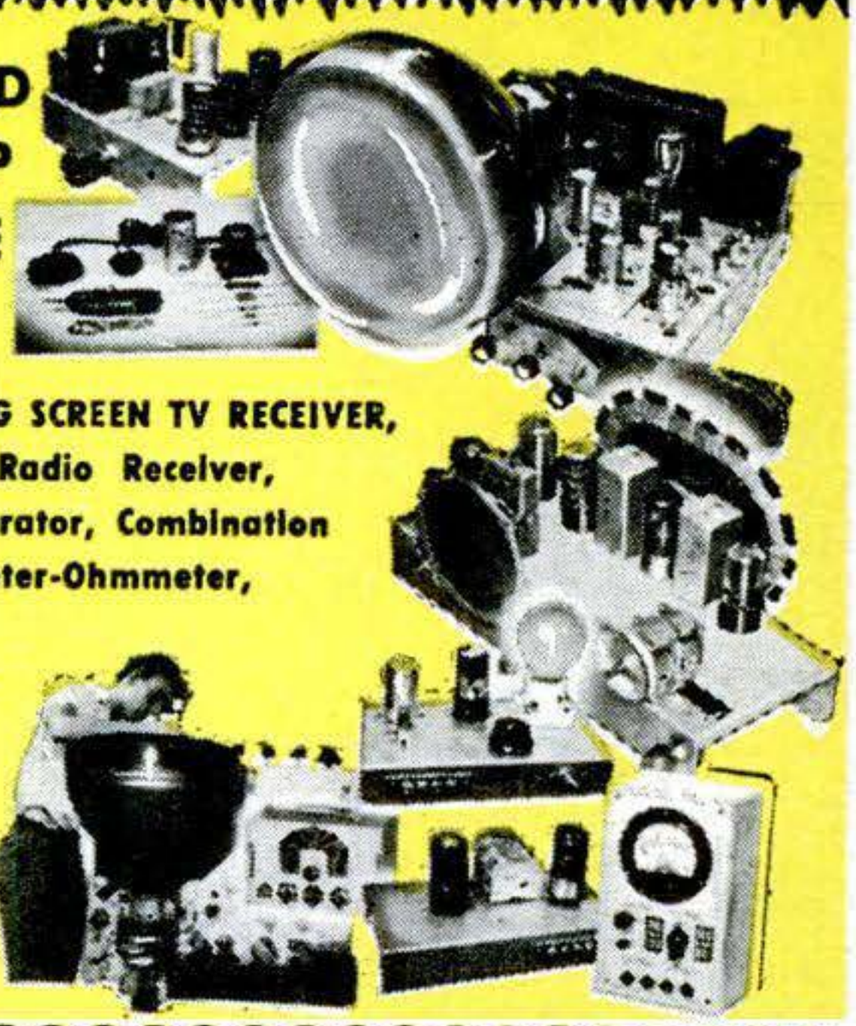
AT NO EXTRA COST! YOU GET A ROUND TRIP TO NEW YORK CITY

FROM ANYWHERE IN THE U.S. OR CANADA—I pay your way to New York and return, PLUS 2 FREE weeks, 50 hours of advanced instruction and shop training at the PIERCE SCHOOL OF RADIO & TELEVISION. You use modern electronics equipment, including student-operated TV and Radio stations. You go behind the scenes of New York's big Radio-TV centers, to study first hand. And I give you all this AT NO EXTRA COST! (Applies to complete Radio-TV course only.)

Only RTTA makes this amazing offer.

SET-UP YOUR OWN HOME LABORATORY WITH THE 15 BIG TELEVISION-RADIO KITS WE SEND YOU (At No Extra Cost)

YOU BUILD AND KEEP ALL THESE UNITS



—INCLUDING BIG SCREEN TV RECEIVER, plus Super-Het Radio Receiver, R.F. Signal Generator, Combination Voltmeter-Ammeter-Ohmmeter, C-W Telephone Receiver, AC-DC Power Supply. Everything Furnished Including All Tubes.

EXTRA FEATURES THAT MEAN MORE MONEY FOR YOU!

Thousands of new job opportunities will be available for you right in your own state, now that the government has lifted restrictions on new TV stations. My simple, successful methods can PREPARE YOU NOW to take your place in America's booming TELEVISION and Electronics industries . . . help you get the success and happiness that you always wanted out of life. You learn the practical, easy way by using actual parts and equipment in the 15 big Radio-TV kits I send you, including a COMPLETE TV RECEIVER . . . yours to build and keep.

My Advanced Training Prepares You For Better Jobs

Then, after you finish your training for a position as a full-fledged TV Technician—where you can write your own ticket and choose from dozens of fascinating careers—*I don't stop there!* I continue to train you—AT NO EXTRA COST—to qualify for even *better pay* in the BETTER JOBS that demand FCC licenses, with my . . .

FREE FCC COACHING COURSE
- PREPARES YOU AT HOME FOR YOUR FCC LICENSE
- THE BEST JOBS IN TV AND RADIO REQUIRE AN FCC LICENSE

Given to every student at NO EXTRA COST after TV Theory and Practice is completed.

NOW! Advanced FM-TV Training For Men Who Know Radio

Prepares You For Higher Pay Jobs In A Few Months

COMPLETE theory and practical training course . . . complete with kits including large screen TV receiver.

FCC License Coaching Course Included FREE.

VETERANS!

MY SCHOOLS FULLY APPROVED TO TRAIN VETERANS UNDER *NEW* G. I. BILL! If discharged after June 27, 1950—CHECK COUPON BELOW! Also approved for RESIDENT TRAINING in New York City . . . qualifies you for full subsistence allowance up to $160 per month.

I GET MY GRADUATES GOOD PAYING JOBS

"As Merchant Ship Radio Officer, I receive $867. for 40-day trip. Your training helped me get this fine position."
— Stanley Nawrocki

I now hold a fine airlines position at La-Guardia Field, New York City, thanks to your excellent training."
— Joseph Rosenberg

"Your excellent instruction helped me get my present job as an airport radio mechanic for American Airlines."
—Eugene E. Basko

"Thanks to your training, I qualified for a good job as a Receiver Tester at Federal Telephone and Radio."
—Paul Frank Seier

Many others working at NBC, RCA, CBS, Dumont, Philco, Emerson, Admiral and other leading firms.

RADIO-TELEVISION TRAINING ASSOCIATION

1629 Broadway, Radio City Station, New York City 19, N. Y.

Approved as a Correspondence School under the laws of the State of New York

BOTH FREE New Illustrated Book plus Sample Lesson

NO SALESMAN WILL CALL!

Mr. Leonard C. Lane, President
RADIO-TELEVISION TRAINING ASSN.
1629 Broadway, Radio City Station
New York 19, N. Y. Dept. P-2

Dear Mr. Lane:

Mail me your *NEW* FREE BOOK and SAMPLE LESSON that will show me how I can make BIG MONEY in TELEVISION. I understand I am under no obligation and no salesman will call.

Name _____ Age _____

Address _____

City _____ Zone _____ State _____

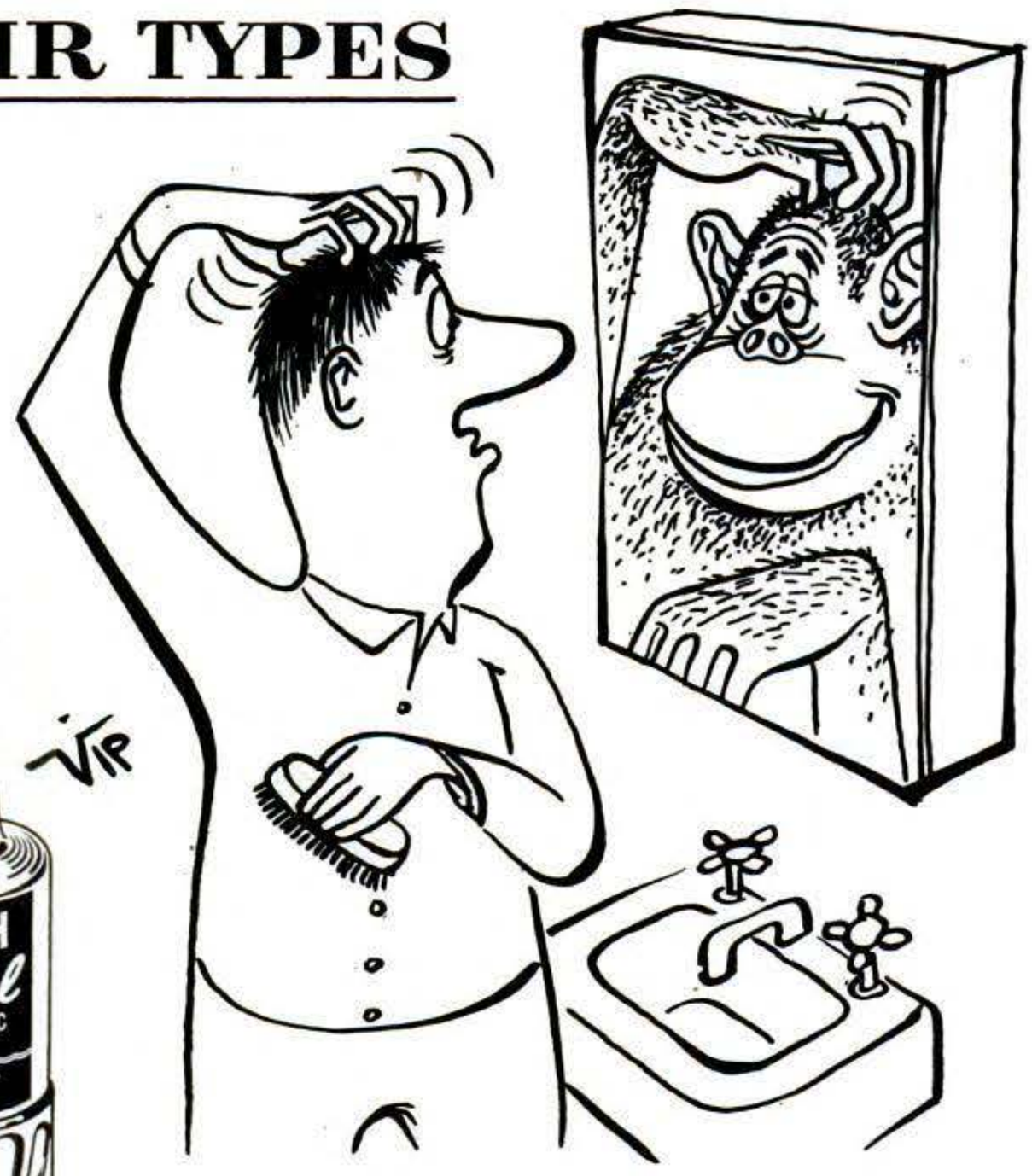
I am interested in: ☐ Radio-TV ☐ Advanced FM-TV

VETERANS: If qualified under new G.I. Bill, check here ☐ Resident Study ☐

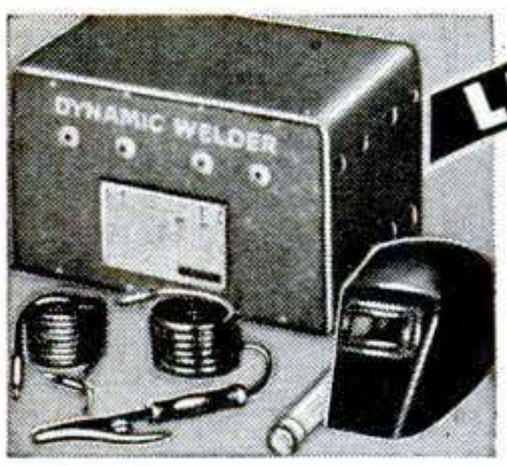
Copyrighted material

Vip's HAIR TYPES

MONKEY BUSINESS! Thatch scratching's out of date . . . itching scalps call for this new kind of *tonic* action. Secret ingredient helps scalp *feel* better while making thin hair look *thicker*, thick hair look naturally *neat!* Regular care with new Fitch IDEAL Hair Tonic keeps hair free of unsightly loose dandruff, too! Not gooey, creamy or greasy. Contains "*quick disappearing*" scent. For "all day" grooming get a bottle of new Fitch IDEAL today!



Get New Fitch
Ideal
Hair Tonic



LEARN WELDING TO MAKE AND SAVE MONEY

Complete Outfit and How - To - Do - It. Everything Needed to Get in Business.

FASCINATING HOBBY...PROFITABLE BUSINESS

This is the time to cash in on big profits to be made doing welding for yourself or others, making valuable items of metal to use or sell. No experience or expensive equipment needed to get started in a profitable business of your own, full or spare time. Write for full details. **FREE**

DYNAMIC WELDER COMPANY 15 E. 23rd Street Dept. D3-BD Chicago 16, Illinois

11 Million Watches Sold Last Year • Over 60% of the People Now Own 2 or More Watches

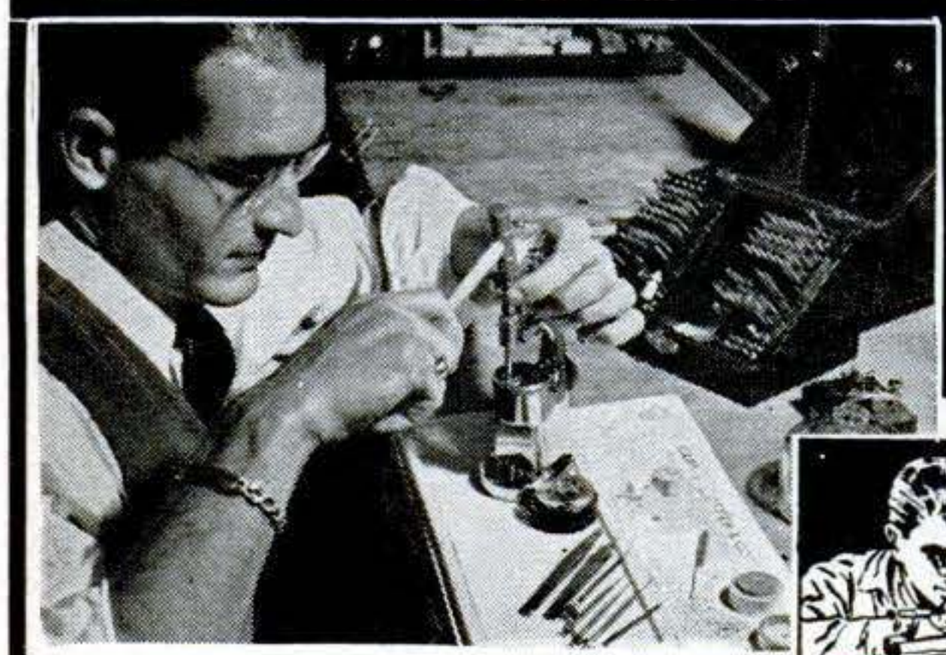
UNLIMITED OPPORTUNITIES FOR SKILLED MEN

Know WATCHMAKING

and You *KNOW* a Profitable, Lifetime Trade

***Learn by* KCSW's HOME STUDY METHOD**

and You *KNOW* Watchmaking



STUDENT STAKING IN BALANCE STAFF.

At this stage in the course many students are earning money to apply on the cost of their training — repairing clocks and watches for neighbors, friends and local shops. You can *REALLY* EARN AS YOU LEARN WATCH REPAIRING.

Student learning use of Watchmaker's Lathe.

THINK OF THIS: 11 Million Watches sold a year; Fashion demands at least two watches per person. THESE MUST ALL BE SERVICED REGULARLY.

You can now learn this valuable trade in your SPARE TIME by KCSW's PRACTICAL HOME STUDY METHOD. Course carefully planned by KCSW's regular staff of experienced watchmakers. Instructor's personal comments and correction on each lesson and project.

BEFORE You enroll for any Home Study Course, it will pay you to write to KCSW, where the best is yours for the writing. *Ours is not a short-cut course.* Get the facts. Write today.

WATCHMAKERS ARE URGENTLY NEEDED.

• When You Learn Watchmaking the KCSW Way—You *KNOW* Watchmaking •

Old Established Resident School

KANSAS CITY SCHOOL OF WATCHMAKING

WATCHMAKING • JEWELRY REPAIRING • ENGRAVING

Admiral & Tracy, Dept. PS Kansas City 6, Missouri

Practical Home Study Courses

Copyrighted material

Plays Pieces

"Was able to play many pieces in a short time. Family and friends surprised! Play for social functions, dances." — *Peter H. Kozyra, Manitoba, Canada.*

Excels Friend Who Has Teacher

"I didn't know a note. Now I play for parties. A friend (taking lessons from private teacher same length of time) is *still* doing simple exercises." — *Marie Van Hulle, Manitoba, Canada.*

Now Invited Out Lots

"It's been fun. Hasn't cost anywhere near as much as private teacher. Now invited to affairs, dances." — *Howard Hopkins, E. Syracuse, N.Y.*

"Didn't Know A Note"

"I didn't know a note. Now I play many selections, to the delight of friends and relatives." — *Lawrence M. Deno, West Chazy, N. Y.*

Progresses Rapidly

"How rapidly I am progressing! Lessons so simple, anyone can understand them." — *Andrew Schneider, Hanna, Wyoming.*

Family and Friends Surprised

"I, my family and friends are surprised at my rapid progress!" — *Pearlie May Clay, Center, Tex.*

Learns Faster Without Teacher

"Have no special talent—but now I play guitar better than many who have had teachers for longer time." —*Myrella-Muquette Saint-Andre, Montreal.*

"Friends Were Amazed"

"Didn't know a note on piano. In a short time I could play simple hymns. Friends were amazed. Now entertain at parties, play at church." — *Samuel Moses, Mt. Vernon, Tenn.*

"How Happy I Am"

"How happy I am. I play for parties, entertainments. Never once thought I would be able to play the piano. Thanks a million!" — *Cora Franklin Duke, Bumpass, Va.*

13-Year-Old Learns

"Never took lessons before. Now play better than friends (with private teachers) who began same time I did." — *Joan Lueck, Big Stone, S. Dak.*

"Easy as Falling Off Log"

"Easy as falling off log. Have always wanted to play. Now my dream is being fulfilled." — *Mrs. Phyllis B. Jones, Blanding, Utah.*

He Makes Many New Friends

Wins Bet With Friends

"Bet friends I could learn piano quickly. Last night, one said, 'Why, sounds like you've been playing *for years!*'" — *Louise Gomez, Oakland, Cal.*

"Now Play Any Piece I Like"

"Never studied music before. Your method is easy! Now play any piece I like." — *Rose Boyer, Blackwell, Mo.*

"Never Dreamed I Would Play"

"Wouldn't have believed it possible — learning to play in such a short time. Friends can't get over it — think it's *me*, but it's your wonderful *lessons!*" — *Eileen Turner, St. Victor, Canada.*

Plays for Church

"I'm 12 years old. I have played for our church. My sister also uses the course. She can play anything — and had never taken lessons before." — *Patsy Jeffrey, Sweetwater, Tex.*

Thousands Now Play Who Never Thought They Could!

EASY LOW-COST METHOD SHOWS YOU HOW TO *Play Right Away*...EVEN IF YOU DON'T KNOW A NOTE NOW

PORT WASHINGTON, N. Y.—As explained in a new FREE BOOK, *anyone who* wishes to play piano, guitar, accordion, or any *other* musical instrument can now learn quickly, through "Easy As A-B-C" Method.

Thanks to the clear, step-by-step, "*print-and-picture*" music lessons which the U. S. School of Music sends out to its students everywhere, thousands now play who never thought they could.

Over 900,000 people, including housewives and business men, bakers and bookkeepers, children and retired folks, have taken up this modern way to learn. On this page are shown *just a few* of their actual reports—telling how well they have done and what it means to them.

Unlike the old-fashioned way to learn music, there are no boring scales or exercises to do. You simply start right in playing simple pieces—properly, *by note*. Sensible explanations and clear pictures guide your fingers every step of the way. Sooner than you'd ever dream possible, you find yourself playing hymns, waltzes, folk songs, musical comedy hits, classical numbers. No particular "talent" is required, and the cost is only a few cents a lesson.

FREE BOOK AND LESSON-SAMPLE

The School will gladly send you, FREE, its interesting 36-page book and a Free copy of its simple "print-and-picture" Lesson-Sample. Merely mail the coupon below for them. There is no obligation, and no salesman will call on you.

NOW IT'S EASY to put this wonderful "new friends and more fun" accomplishment into YOUR life! Mail coupon NOW for FREE BOOK telling all about it. U. S. School of Music, Studio C152, Port Washington, N. Y. (*Special Reduced Prices on instruments to our students.*) We are now in our 55th successful year!

Mail this for FREE BOOK

U. S. School of Music, Studio C152, Port Washington, N. Y.

Send me FREE BOOK and FREE Lesson-Sample. No obligation—and no salesman is to call upon me. I'm interested in playing (name instrument).....

.....

☐ I do ☐ I do *not*—have instrument now.

Name..... (Please Print)

Address.....

City..... State.....

(Please state Zone No. (if any)

Gave Famous Band Leader His Start

"Got my start with a U. S. School Course. It's *easy* to learn to read notes and play this 'teach-yourself' way!" — *Lawrence Welk, well-known orchestra leader.*

"Enjoyed Every Step"

"Enjoyed every step of the way. Friends can't get over the improvement made in such a short time." — *Helen Prevas, New Castle, Del.*

Never Believed It Possible

"Never dreamed I would ever play. I didn't know one note. Today I play delightful pieces." — *Mrs. Dallas B. Kerk, Lodgepole, Nebr.*

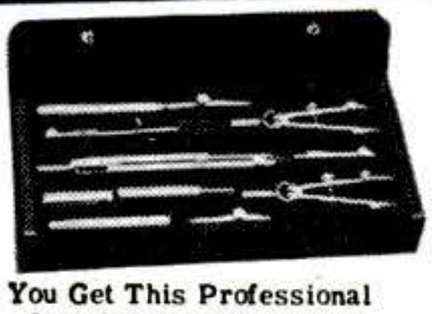
Copyrighted material

BE A LEADER IN INDUSTRY

CLEVELAND ENGINEERING INSTITUTE

DRAFTING

IS YOUR LADDER TO SUCCESS



You Get This Professional Set of Instruments at no Extra Cost

It's EASY if you use CEI Simplified Training & Coaching

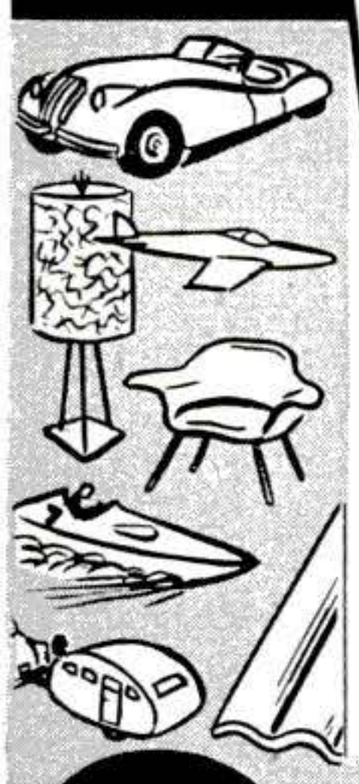
Get in on the big money industry is offering for draftsmen. CEI will teach you Drafting easily and quickly in your spare time at home and help you get a job. Be like industry's leaders and use drafting as your springboard to success.

CLEVELAND ENGINEERING INSTITUTE

Cleveland Engineering Institute
Extension Division PS-2C
6300 Euclid Ave.
Cleveland 3, Ohio
( ) Aeronautical ( ) Mechanical
NAME.....
ADDRESS.....
CITY.....STATE.....
No Obligation—No Salesmen

GET FREE SUCCESS BOOK

MAKE BIG MONEY WITH MIRACLE FIBERGLASS



UNLIMITED OPPORTUNITY Be on the inside with a rapidly growing business. Make $150.00 a week and up as a fiberglass technician. First offer ever made to establish franchises in this fabulous new field. Makes a fascinating hobby, too.

BE YOUR OWN BOSS No expensive overhead. Start in your spare time. Be independent. Secure your future. Build and repair boats - trailers - models - aircraft - car bodies - furniture. 1001 uses.

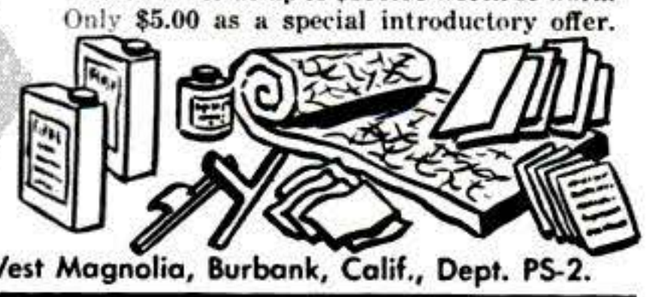
DEFENSE CONTRACTS Fiberglass was developed for the government in World War II. The present national emergency has opened thousands of jobs and business opportunities for trained fiberglass technicians. Get practical know-how and experience while you make big money.

MONEY BACK GUARANTEE You risk nothing. If not completely satisfied, return kit and your money will be refunded immediately.

EVERYTHING YOU NEED "Plasti-Glas" starter kit contains complete instructions - tools - materials—to do up to $100.00 worth of work. Only $5.00 as a special introductory offer.

SEND ONLY $5.00 for your BIG "Plasti-Glas" Starter Kit

F.O.B. L.A. APP. 5 LBS.



Plasti-Glas Company, 1701 West Magnolia, Burbank, Calif., Dept. PS-2.

ACT TODAY • Use This Handy Coupon

Plasti-Glas Company, 1701 W. Magnolia, Burbank, Calif., Dept. PS-2.
I enclose $5.00. Please rush my big "Plasti-Glas" Starter Kit. If not completely satisfied, I can return the Kit within 10 days for a full refund.

NAME_____
ADDRESS_____
CITY_____ZONE_____STATE_____

MEN WANTED!

Make $15-$20 in Few Hours Spare Time—up to $210.00 a Week FULL TIME—with Amazing D-FROST-O-MATIC!

Millions of housewives want this sensational new Automatic Refrigerator Defroster! No more messy hand defrosting! Just plug in D-FROST-O-MATIC and refrigerator is defrosted *automatically* every night! Sales easy, sure when you leave D-FROST-O-MATIC on FREE TRIAL—housewives won't let you take it out! Saves money, food, time, work! ***Big profits for you***—up to $210.00 a week full time—$15 to $20 in just a few spare hours! Start spare time and build big, prosperous business . . . quickly, easily!

SELLY of California started in his spare time and now sells 1500 D-Frost-O-Matics a month!

Rush Name Today for Profit Details and FREE TRIAL PLAN!

More than **29,000,000** prospects waiting! Rush your name and address today. We'll airmail exciting facts, proof and sure-profit Free Trial plan. No obligation. Write today.

D-FROST-O-MATIC, Dept. T-14
173 W. Madison Street, Chicago 2, Ill.

WHAM-O SPORTSMAN * $1.50 POSTPAID 35-LB. PULL!

HITS LIKE A RIFLE—
KILLS RABBITS, SQUIRRELS.
Powerful, silent, accurate.
For hunting, target, routing pests.
Sportsman's choice sold world over!

HUNTING SLINGSHOT
Heavy duty 7" ash stock.
40 steel balls, extra rubber, target.
GUARANTEED. At dealers, or send $1.50 to
Wham-O Mfg. Co. Box 8B, South Pasadena, Calif.
*** Professional model of Nat'l Slingshot Assn.**

EASY TO LEARN CODE

Learn or increase speed with an Instructograph—the Radio-Telegraph Code Teacher that takes the place of an operator-instructor and enables anyone to master code without further assistance. Available tapes from beginners alphabet to typical messages on all subjects. Speed range 5 to 40 WPM. Always ready—no QRM. Thousands have "acquired the code" with the Instructograph System. Write today for convenient rental and purchase plans.

INSTRUCTOGRAPH COMPANY
4701-P Sheridan Road, Chicago 40, Illinois

"How to MAKE MONEY with Simple CARTOONS"

A book everyone who likes to draw should have. It is free; no obligation. Simply address

FREE BOOK

CARTOONISTS' EXCHANGE
Dept. 192-D Pleasant Hill, Ohio

"How I upped my pay $1000!"

"After completing the I.C.S. Automotive Course, I took the Civil Service exam for Auto Mechanic No. 1 along with factory-trained men and high school graduates. My score put me first on the list and boosted my pay $1000." What Ed Russell did, you can do. Any one of 391 courses can help win promotion, more pay for you. Just mail the coupon. Free catalog plus 36-page book, "How to Succeed."

INTERNATIONAL CORRESPONDENCE SCHOOLS
Dept. 7637-N, Scranton 9, Pa.
Please send free success book plus catalog on course checked:

☐ Aeronautics ☐ High School ☐ Accounting
☐ Automobile ☐ Commercial Art ☐ Mechanical Engineering
☐ Drafting ☐ Business Administration ☐ Electrical Engineering
☐ Practical Electrician ☐ Architecture ☐ Radio-TV-Electronics
☐ Other subject_____

Name_____Age_____
Address_____

Copyrighted material

THIS ALADDIN 5-ROOM HOUSE

$1974

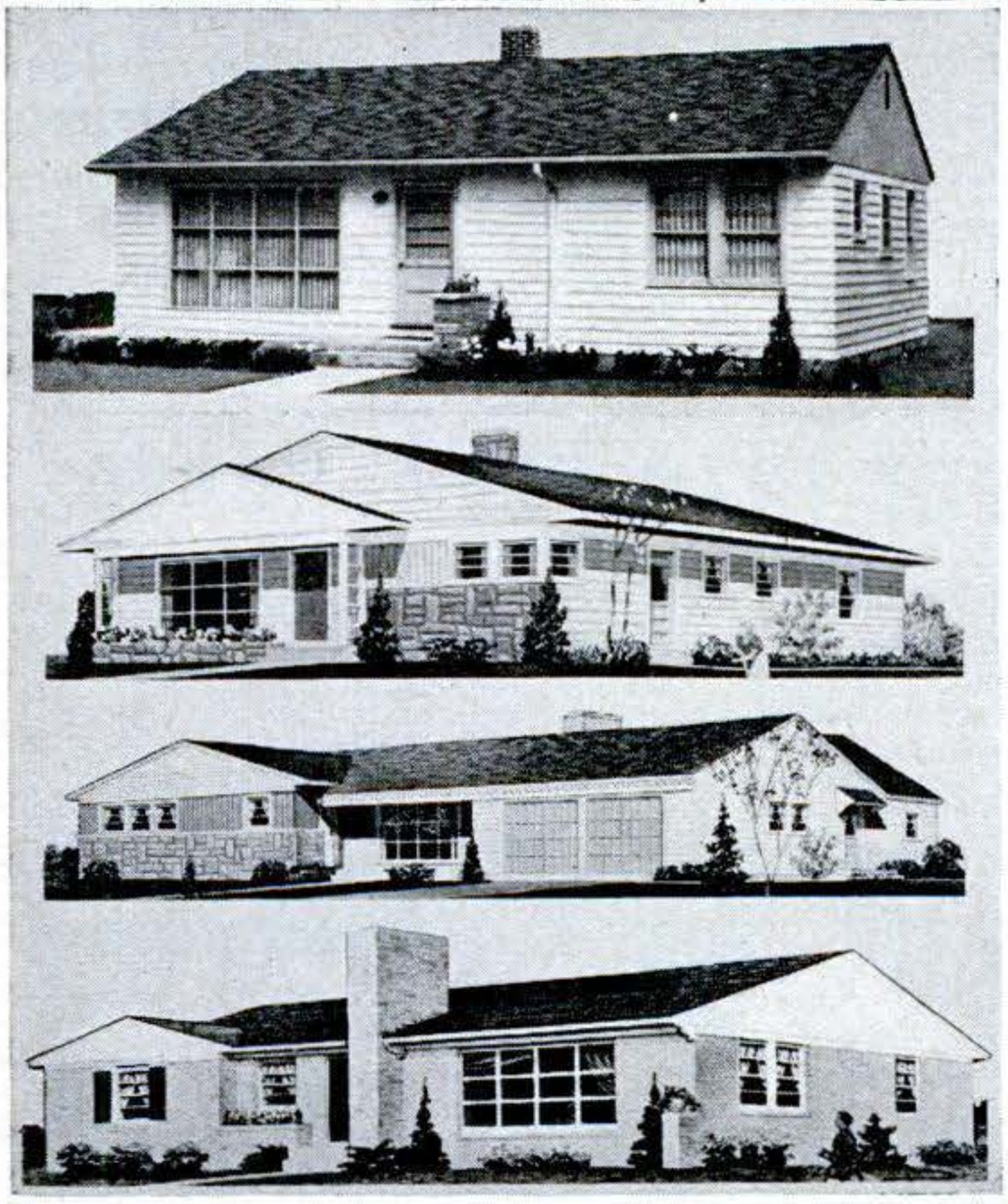
FREIGHT PAID

Slightly Higher West of Missouri River

YOU CAN BUILD THIS ALADDIN READI-CUT HOUSE YOURSELF... and Save Hundreds of Dollars!

Imagine receiving A COMPLETE HOUSE IN ONE SHIPMENT—ready to erect! You get everything needed. The lumber is the finest—every piece THOROUGHLY DRY. And it comes to you the EXACT SIZE needed—cut at the mill by fast, precision machines. No stopping to measure and saw each piece! (You save as much as 30% on labor—18% on waste) and YOU CAN CHOOSE FROM 99 INDIVIDUAL PLANS—beautiful, modern houses of all sizes and styles. Not only will you save money but you will have the satisfaction of knowing that Aladdin Houses have withstood the test of time during the past 46 years. Aladdin's thousands of satisfied customers are your guarantee of honest value.

99 INDIVIDUAL PLANS!



THIS IS THE WAY TO BEAT THE HIGH COST OF BUILDING!

BUILD YOUR OWN HOME

With carpenters getting up to $24 a day think how much you can save by building your own Aladdin house! Carpentry work runs from 300 to 1200 hours, depending on the house you choose. Even if you hire help you save because most of the expensive, time-consuming labor (measuring and cutting) has been done by machine at the mill. No wonder Aladdin houses are so easy to build—and at a cost that often compares favorably WITH PRE-WAR COSTS! Drawings and instructions are simple to follow and cover everything from the foundation up. More than half the Aladdin houses sold have been erected by the buyers themselves!

WHAT YOU GET WHEN YOU BUY AN ALADDIN HOUSE

- ALL THE LUMBER accurately cut to fit, marked and numbered ready to erect practically without the use of a saw.
- SIDING
- HARDWARE
- MILLWORK
- GLASS
- FLOORING
- PAINT
- MOULDINGS
- ROOFING
- DOORS
- TRIM
- WINDOWS
- NAILS
- COMPLETE DRAWINGS & INSTRUCTIONS

IMMEDIATE DELIVERY

GOOD HOUSES NEVER GROW OLD—
ALADDIN HOUSES ARE NOT PREFABRICATED

ALADDIN GUARANTEE SATISFACTION OR YOUR MONEY BACK

THE ALADDIN CO.

BAY CITY, MICHIGAN

Est. 47 Years

Send 25¢ FOR BEAUTIFUL NEW FULL-COLOR CATALOG **No. CM-20**

Copyrighted material

FREE 100 BRITISH EMPIRE STAMPS

Sent to Acquaint You with the Exceptional Values of Our Special Offers

Get these valuable exciting stamps from the far corners of the British Empire: Pitcairn Islands (settled by mutineers), Falkland Islands (only post-office in Antarctic Circle), Tanganyika (land of pygmies and head-hunters), Ceylon, South Africa, many others! Price in Standard Stamp Catalog at least $2.00! Supply limited — so rush coupon today enclosing 10c to help pay postage and handling charges. (We'll also include other exceptional values for your inspection.)

Also FREE—
—our valuable illustrated booklet "How to Recognize Rare Stamps". Tells where and how to hunt for rare stamps, how to identify and sell them. May guide you to stamps worth hundreds of dollars!

KENMORE STAMP CO., Dept. PS-2
Milford, New Hampshire
Rush me FREE 100 British Empire Stamps and Booklet "How to Recognize Rare Stamps." I enclose 10c to help pay postage and handling.

Name_____
Street_____
City_____ State_____

FREE! GET BIG 34-PAGE CATALOG

Tells how to train for AVIATION CAREER in Aeronautical Engineering and Aircraft & Engine Mechanics

NORTHROP AERONAUTICAL INSTITUTE
1525 E. Broadway, Hawthorne (Los Angeles County), Calif.

Name_____ Age_____
Address_____
City_____ Zone_____ State_____

STUDY AT HOME LAW FREE BOOK!

Prepare for the Bar!

Write today for a copy of our FREE book, **"The Law-Trained Man,"** which gives the bar rules in your state and tells how ambitious men and women since 1890 have been preparing at home in spare time for the practice of law by studying the famous Blackstone bar-training course. All needed instruction material is furnished including big 16-volume law library. Law diploma awarded. Moderate tuition; easy monthly terms. Write for FREE book today!

BLACKSTONE SCHOOL OF LAW
225 N. Michigan Ave., Dept. 122, Chicago 1, Illinois

WHAT GOOD IS A TIRE WITHOUT A TUBE?
TUBE GIVEN WITH EVERY TIRE AT NO EXTRA COST

Why Pay More!

WINTER SPECIALS—AT LOW PRICES
SAVE TIME—SAVE MONEY—SEND THIS AD
GOOD USED TIRES—NOT RECAPS
19 YEARS AT THIS ADDRESS
Be Wise— A TRIAL OF ONE TIRE WILL CONVINCE YOU.
EVERYBODY MAY TAKE **10% off** ON EVERY TIRE

20 MONTHS WRITTEN GUARANTEE

600-16	$4.10	820-15	$5.35	600-20	$7.10	32x6(8)	$8.55
650-16	5.55	700-15	4.50	650-20	7.85	32x6(10)	9.85
700-16	5.00	670-15	4.45	700-20	8.45	900-20	13.15
650-15	4.35	710-15	4.65	750-20	8.55	1000-20	13.75
760-15	4.95	550-17	4.45	825-20	14.65	1100-20	13.85

EXTRA SPECIAL 30 MONTH WRITTEN GUARANTEE

600-16	$5.35	475-19	$4.85	700-15(6)	$8.95	700-20	$11.00
600-16(6)	6.45	640-15	5.05	750-16(8)	10.75	750-20(10)	15.45
650-16	5.85	670-15	5.55	700-17	9.95	750-20(8)	15.05
650-16(6)	7.35	710-15	5.75	750-17	11.75	825-20	18.35
700-16	6.45	760-15	6.05	750-15	13.95	900-20	17.25
750-16	9.25	800-15	6.55	825-15	12.95	1000-20	17.75
525-18	5.00	820-15	6.65	600-20	8.75	1100-20	19.55
550-17	4.95	670-16	6.35	650-20	10.25	1000-22	19.45
650-15	5.35	760-16	7.15	32x6(8)	11.15	1100-22	20.45
700-15	5.45	700-16(6)	7.65	32x6(10)	11.75	1200-20	29.95
White Walls $1.00 Extra				Military treads 750-20			16.15

Thousands of tires shipped all over U. S. A. All tires shipped F.O.B. Phila. Send Check or M.O. with this ad. Dept. 5.
STANDARD 834 N. Broad St., Philadelphia 30, Pa.

FREE BIG SALES KIT
Make up to $30.00 a day - Full Time or Part Time

Build a permanent "repeat" business of your own without one penny of investment! Sell John Neil Air-Cushion Shoes Direct from famous New England factory. Firestone Foamex cushions — complete line of men's dress, work, safety shoes! Women's and children's shoes. Fast deliveries from our mammoth stock department.

JOHN NEIL SHOE CO.
Dept. 715 Brockton 64, Mass.

$1,000.00 Worth of Furniture for Cost of Materials Alone!

Make over $1,000 worth of furniture for indoors and out with help of amazing new book "WISE HOME FURNITURE BUILDER." Over 500 pictures, plans, and step-by-step instructions. No special tools or experience needed. **Save $10.00 to $200.00** on Tool Cabinets, Workbench, Portable Tool Box, Tennis Table, Built-In Wardrobe Closet, Storage Chest, Barbecue Pit, Garden Furniture **and much more!** 256 big double-column pages. Thousands paid $2.95 and $3.95. Now we SLASH price to only $1.95. Mail card for week's FREE-Trial today. Write Dept. 802
Wm. H. Wise & Co., Inc., 50 W. 47th St., N. Y. 36, N. Y.

GET INTO ELECTRONICS

You can enter this uncrowded, interesting field. Defense expansion, new developments demand trained specialists. Study all phases radio & electronics theory and practice: TV; FM; broadcasting; servicing; aviation, marine, police radio. 18-month course. Graduates in demand by major companies. H. S. or equivalent required. Begin Jan., March, June, Sept. Campus life. *Write for catalog.*

VALPARAISO TECHNICAL INSTITUTE
DEPT. 503 VALPARAISO, INDIANA

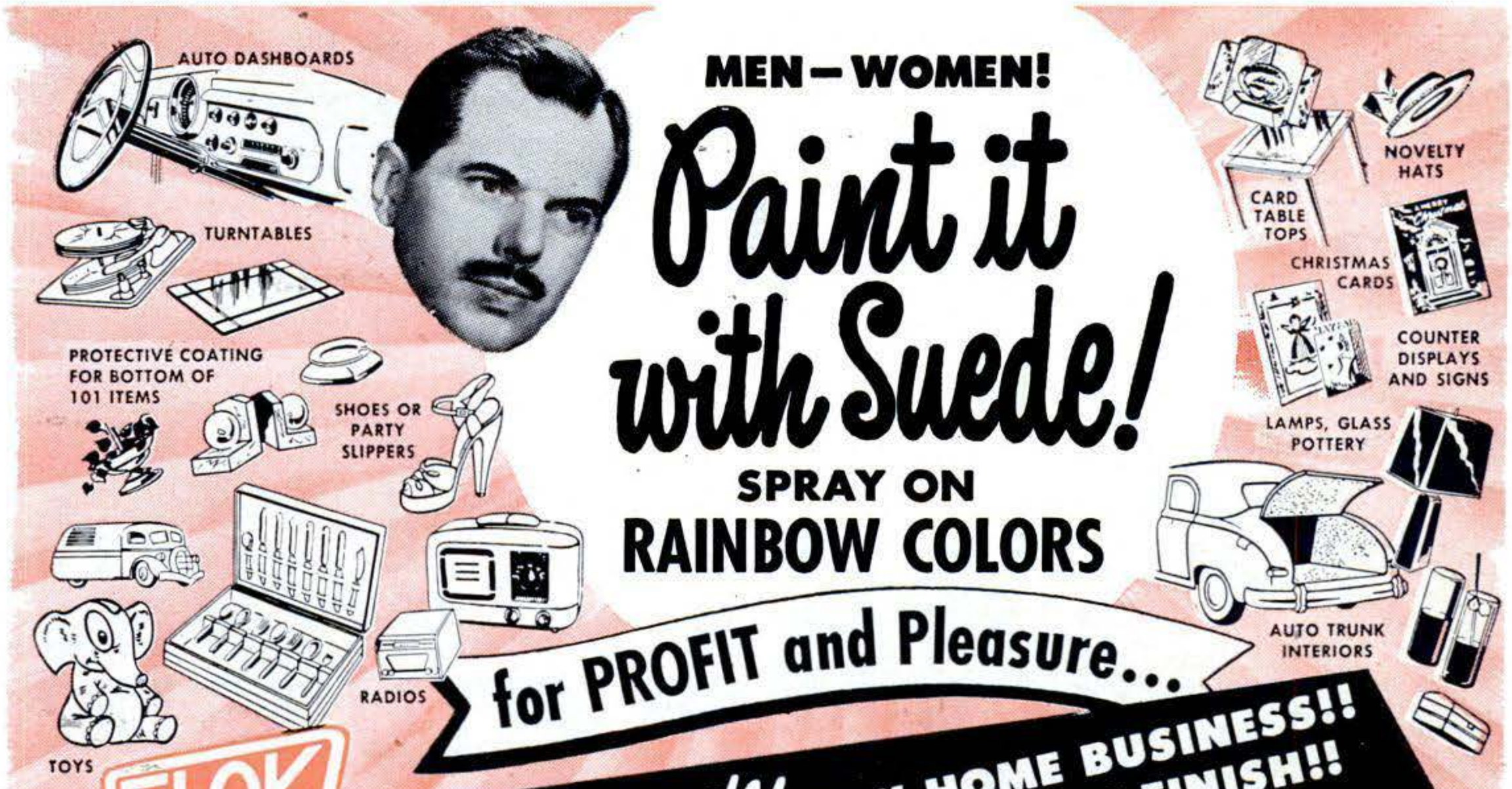
ENDS FRONT WHEEL DRAG ON 4-WHEEL DRIVE JEEPS

Willys $20.00
Dodge $23.00
Pair, Prepaid U.S., Canada

MAKES 2 JEEPS OUT OF 1!
Cut repair bills! Double the usefulness of your Jeep! Enjoy snappier performance! Install Warn Hub Caps on your 4-wheel drive Willys Jeep, Station Wagon or pick-up; or Dodge Army ¾ ton or Power Wagon—get more power, speed, pick up. Warn caps eliminate heavy drag of complex front end drive assembly, front wheels coast out of gear on roller bearings—4-wheel handles, performs like 2-wheel. Warn Caps increase gas mileage up to six miles per gallon, stop shimmy even though gears are worn, add thousands of miles to tire life. No interference with low power range or 8 speeds. Easy to install or remove in 10 minutes. No special tools required. Thousands of satisfied owners. Polished aluminum, last for years. Guaranteed. Rush check, M.O., C.O.D. or write for literature.

WARN MFG. CO., Riverton Box 6064 - B2, Seattle 88, Wash.

Copyrighted material



MEN—WOMEN!

Paint it with Suede!

SPRAY ON RAINBOW COLORS

for PROFIT and Pleasure...

FLOK KRAFT TRADE MARK REG.

A SENSATIONAL NEW HOME BUSINESS!! A NEW INDUSTRY . . . A NEW MIRACLE FINISH!! MAKE $500 to $1000 PER HOUR and more!

Flok-Kraft Covers:
Fabric, Metal, Glass, Plaster, Wood, Plastic or—*any surface!*

Read What Others Say About Flok-Kraft

"Received the flok-kraft outfit and everyone that saw it is very enthused. I only had it about thirty minutes and got an order for a hundred dollar job." Mr. C. H. Maryland.

"Got $52.50 for those 7 trunk interiors for about 4 hours work. $7.50 per trunk." J. O., Mo.

". . . I have received my order of Flok and Adhesives and believe me, I'm very pleased and happy as I've made myself MORE than the cost of my supplies already, and I've still got more jobs to do." Cpl. G. W., S. Carolina

". . . pleased with your course and I'm being swamped with work to do." W. F.,

PROFESSIONAL SECRETS CAN BE YOURS

At last the carefully guarded secrets of this amazing miracle finish can be yours. Huge profits are waiting to be tapped in this tremendous new field. Flok-Kraft gives a velvety, luxurious surface to radios, lamps, toys, signs, store displays, figurines, auto dash boards—actually a thousand and one items to be seen on every hand can easily and quickly be beautified, enriched, increased in value with Flok-Kraft. Make old objects beautiful and saleable. Make new things worth more with this soft, rich covering that can be applied to any surface, even if old and worn.

YOU CAN LEARN IN A FEW DAYS

Yes, you can learn in a few days to start making money—big money! Make to $5.00—yes! even $10.00 *and more* per hour. Everything you need is furnished, including fully detailed instructions that are *complete* and easy to understand. Every point is explained to show you how to start on the road to big money, full or spare time.

WE FURNISH EVERYTHING YOU NEED TO START

In addition to the full step-by-step instructions you get a complete set of materials and equipment that enables you to start at once. A few cents worth of materials can mean many dollars in returns to you. You can make big profits, spare or full time—add to your income from your regular job or begin to build your own successful future with a full time business of your own and do it all right in your own home! A corner of your basement, garage, service porch, kitchen or living-room is all the space you need to start.

GRASP THIS LIFETIME OPPORTUNITY TODAY

This is one too good to miss. Fill out the coupon below and mail it today for full free details. I'll arrange to send you the complete outfit—everything you need to start—for leisurely, no-risk examination right in your own home. You owe it to yourself to investigate. Write now for full, free details, samples, etc. Fill out and mail the coupon below. Do it today! Everything I send you is FREE.

YOURS TO EXAMINE WITHOUT RISK!!

Examine in your own home — then decide The complete instructions, the full starting kit of materials and equipment and full details on how you can open your own business, spare or full time — EVERYTHING will be sent you to EXAMINE AT OUR RISK!

FLOK-KRAFT and DEFENSE

This amazing miracle finish is of inestimable value for use on hundreds of defense products. Flok-Kraft offers you a way to big, extra money, assisting manufacturers in many lines as well as filling a big demand on the home front.

FREE! Booklet, Sample, Plan!

Coast Industries, Dept. 12,
1004 Los Angeles St., Los Angeles 15, Calif.

SEND NO MONEY—MAIL COUPON NOW!

COAST INDUSTRIES, Dept. 12,
1004 S. Los Angeles St., Los Angeles 15, California

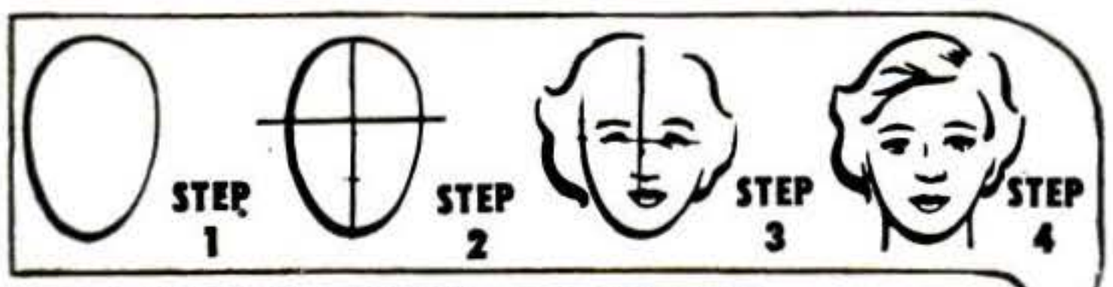
Gentlemen:
Please rush me FREE details, sample, etc., I understand that everything you send is free and that I'll be under no obligation now or ever.

NAME_____

STREET_____

CITY_____ STATE_____

Copyrighted material



SEE HOW EASY IT IS TO BE AN ARTIST

FREE BOOKLET

LEARN COMMERCIAL ART, CARTOONING, DESIGNING

Free Booklet Shows how you can earn while you learn

Book explains art principles, artists' earnings: age no obstacle; home study advantages; examples of successful cartoonists, illustrators; layout, lettering, fashion art; design, color, composition; reproduction processes; outline of course, etc.

In our 39 years of teaching we have trained thousands how to draw for PLEASURE AND PROFIT. Get this free illustrated booklet which tells how WSA-trained artists earn excellent livings in the fascinating field of art. You get without extra cost two complete art outfits, the Life Class Book to teach you how to draw the human figure; the handbook "How to Sell Your Art Work." GI approved for eligible veterans. Mail coupon today for your FREE booklet "ART FOR PLEASURE AND PROFIT." No salesman will call.

DRAW FOR FUN & MONEY . . . DETAILS FREE

Washington School of Art, Studio 132K, Washington 5, D.C.

☐ Rush Booklet. ☐ Describe Trial Plan.

Name.....

STREET.....Age.....

City.....Zone.....State.....

BE A WELL-PAID

TELEVISION SERVICE TECHNICIAN!

NOW — For the First Time an Exclusive TV Service Training Program — 8 months or less.

Get the inside facts on how you can step into the top professional $5,000 to $10,000 per year bracket of TV servicing. Free book tells you how. Master TV servicing QUICKLY by working on real live equipment right in our BIG SHOPS and LABORATORIES in America's Leading TV Servicing School. Shop trained men get the better jobs. WTI graduates win faster promotion . . . can demand better pay . . . develop highly profitable businesses of their own — with the latest and most complete PRACTICAL PERSONALIZED TRAINING BEHIND THEM. Non-essential math and engineering theory omitted. YOU CAN EARN WHILE YOU LEARN. LOW TUITION PLAN. Approved for Veterans. WTI Graduates In Big Demand. Send for your copy of this fact-packed book NOW!

SEND FOR FREE COPY TODAY!

WESTERN TELEVISION INSTITUTE Dept. M-23
341 W. 18th St., Los Angeles 15, Calif.

Without obligation, please send FREE fully illustrated booklet. (No salesman will call.)

NAME_____

ADDRESS_____

CITY_____ZONE_____STATE_____

Tells How You Can Learn to MOUNT BIRDS!

Learn At Home

Men, Boys, Hunters, Fishermen, **mount** and **save** your lovely wild-game **trophies.** Be a **Taxidermist.** Mount **Birds, Animals, Heads, Fish, Tan** skins. **YOU** learn easily, quickly in **spare time.** Have a grand **home-museum.** The finest and the greatest **hobby known,** for sportsmen. **Fun,** real **profits.**

FREE BOOK

Yes, **FREE.** Beautiful **strange,** valuable **Book,** telling **all** about Taxidermy. Contains over **100** beautiful game-pictures. And **it's yours FREE, if you rush your request. You can mount all kinds of wild-game,** and common specimens too. **We can positively TEACH YOU.** So **GRASP** this opportunity. **RUSH** letter or postal for this amazing **FREE BOOK.** Don't delay. State your **AGE.**

N. W. SCHOOL OF TAXIDERMY, 2602 Elwood Bldg., Omaha 2, Neb.

RUPTURED?

Get Relief This Proven Way

Why try to worry along with trusses that gouge your flesh —press heavily on hips and spine—enlarge opening—fail to hold rupture? You need the Cluthe. No leg-straps or cutting belts. Automatic adjustable pad holds at real opening — follows every body movement with instant increased support in case of strain. Cannot slip whether at work or play. Light. Waterproof. Can be worn in bath. Send for amazing **FREE** book. "Advice To Ruptured" and details of liberal truthful 60-day trial offer. Also endorsements from grateful users in your neighborhood. Write:

CLUTHE SONS, Dept. 14, Bloomfield, New Jersey.

MASTER MIND!

Learn Short-Cut Mathematics

Juggle figures, do baffling number tricks. Make people gasp at your marvelous *lightning-quick* mind. Multiply 4 figures by 4 figures without using old-fashioned multiplication! Big cloth-bound volume: fully illustrated course.

Sharpen up Your Brain Power

Includes worked-out problems, answers, etc. Sensational bargain, only $1.95, postpaid or COD plus postage. Satisfaction guaranteed or refund. Order this amazing "Short-Cut Mathematics" today!

NELSON-HALL CO., 210 S. Clinton St.
Dept. 4-BX-1 Chicago 6, Ill.

$1.95 Complete

Do You Make These Mistakes in English?

MANY persons say "between you and I" —use "who" for "whom"—don't know whether to use one or two "e's" or "m's" or "r's." Every time you speak or write you show what you are. A command of effective English brings you added advantages, better opportunities.

You can improve your English through Sherwin Cody's 100% self-correcting invention. If you are ever embarrassed by mistakes in grammar, spelling, punctuation, or pronunciation, write for FREE book "How You Can Master Good English in 15 Minutes a Day." No obligation. **SHERWIN CODY COURSE IN ENGLISH, 182 B & O Bldg., Rochester 14, N. Y.**

Try This Famous Way to Higher Pay

WANT a *tested* way to get ahead? Why not do as nearly six million people have done? Enroll in an I.C.S. home study course that's "right up your alley." Become an expert in your field—enjoy higher pay, more important job. Learn right at home, in spare time. Choice of 391 profitable subjects. Engineering, Chemistry, Art, Business, Radio and TV, etc. 203 instructors. COSTS ONLY A FEW CENTS A DAY.

2 FREE BOOKS. Write for free book; state subject that interests you. Also free, *"How to Succeed,"* 38 pages of valuable tips on How To Pick Your Goal, How To Develop Hidden Talents, etc. Just send your name, address. No obligation. International Correspondence Schools, Box 7633-N, Scranton 9, Penna.

Copyrighted material

Let CORTINA Show You A SHORT-CUT To.....

MORE MONEY

A NEW CAREER

CULTURAL ENJOYMENT

TRAVEL FUN

MAIL COUPON FOR

FREE

2-SIDED, NON-BREAKABLE

RECORD

Just Listen— Pick up many phrases *in the first 15 minutes!*

START SPEAKING

SPANISH OR FRENCH

GERMAN • ITALIAN • RUSSIAN • JAPANESE or BRAZILIAN

ALMOST OVERNIGHT!

With a Second Language—You're a Big Step Ahead of the Other Fellow; Job Opportunities Here and Abroad

Speak with Perfect Accent —*By listening* to native instructors (on the record) you naturally acquire their fine accent.

MAIL coupon below. We'll send you this double-faced, non-breakable sample record plus a sample Cortina Lesson. BOTH FREE!

Just listen as your native instructor speaks to you on the record. At the same time, let your eye run over the words in the sample Cortina Lesson. Almost before you realize it, you'll be "chatting" easily in your new language—*with a perfect accent!*

Easiest Way to Learn a New Language

- You learn by listening—*just as a child learns.*
- You learn to speak with a perfect accent—because that's all you hear. You can't go wrong.
- You don't learn "verbs and syntax." You learn CONVERSATION. That's the only way to learn a living language.

A Wonderful Time to Start

Now is a perfect time to learn a new language. American business abroad is booming; travel is running into billions. Good paying, interesting jobs are open both here and overseas. And because so few Americans speak a foreign language—*you can pretty well write your own ticket.*

Mail Coupon NOW

There are no "strings" to this offer. Start speaking a new language right away. See how easily a complete mastery of the language can be yours—through the Cortina Method.

But hurry! Offer may end soon. Rush coupon with 25c to help cover cost of special packaging, shipping. We'll also send you a FREE 32-page book describing the full Cortina Course. No obligation.

CORTINA ACADEMY

(Originator of the Phonograph Method)

Dept. 122, 105 W. 40th St., New York 18, N. Y.

MAIL AT ONCE FOR *Free* RECORD

CORTINA ACADEMY, Dept. 122, (Established 1882)
105 W. 40th Street, New York 18, N. Y.

Please send me a FREE sample record and lesson in (check one) ☐ **SPANISH** ☐ **FRENCH** ☐ **RUSSIAN** ☐ **GERMAN** ☐ **ITALIAN** ☐ **JAPANESE** ☐ **BRAZILIAN** and complete information about the full Cortina course. Enclosed is 25c (stamps or coin) to help cover the cost of special packaging, shipping.

Name.....

Address.....

City.....Zone.....State.....

Copyrighted material

The NEW Model 50 UTILITY TESTER

FOR REPAIRING ALL ELECTRICAL APPLIANCES-MOTORS

an all-around electrical trouble shooter

- Measures A.C. and D.C. Voltages, A.C. and D.C. Current, Resistances, etc.
- Will measure the current consumption **while the appliance under test is in operation.** The appliance or utility may be plugged directly into the front panel receptacle. A special pair of insulated clip-end leads is included for motors, etc.
- Incorporates a sensitive direct-reading resistance range which will accurately measure all resistances commonly used in electrical appliances, motors, etc. This range will enable continuity checks and tests for shorts and opens.
- Will test thermostats, radio tube filaments, bulbs, fuses, fluorescents, condensers, switches, field coils, circuit breakers, lighting systems, etc.

Handsome round cornered molded bakelite case 3⅛" x 5⅞" x 2¼". Complete with all test leads and instructions.

$13.90

SHIPPED ON APPROVAL

No Money With Order — No C.O.D.

Try it for 10 days before you buy. If completely satisfied send $3.90 and pay balance at rate of $2.00 per month for 5 months —No Interest or Carrying Charges Added. If not completely satisfied, return to us, no explanation necessary.

SUPERIOR ELECTRONIC CO., INC.
Dept. D-49, 227 Fulton Street, New York 7, N. Y.
Please rush 1 Model 50. I agree to pay $3.90 within 10 days after receipt and $2.00 per month thereafter.

Name.....

Address.....

City..... Zone..... State.....

ACCORDIONS AT LOWEST WHOLESALE PRICES

5-DAY FREE TRIAL

"PAY AS YOU PLAY"
Small Down Payment
As Little As
$10 per month

DIRECT from Importer to You!

SATISFACTION GUARANTEED, or your money back! NOW you can save up to 50% by direct purchase from America's leading distributor of famous genuine ITALIAN ACCORDIONS.

Send for FREE Illustrated Catalog!

ACCORDION MANUFACTURERS & WHOLESALERS OUTLET
2003 West Chicago Ave. Dept. P-14, Chicago 22, Ill.

Malayan THROWING DAGGER

BALANCED TO STICK! **$1.98** postpaid

The **MALAYAN FIGHTING KNIFE** is used for self-defense, killing game, target skill. Powerful, silent, accurate weapon. Splits 1" board at 30 ft.

EASY TO THROW!

MONEY BACK GUARANTEE

Fun, Thrills, Excitement!

Indoors—outdoors. Learn this Sport! Easy to throw accurately with our clear instructions. Beautiful, heavy-duty 10" knife. Tempered steel. Tough, rawhide-bound handle. Rare souvenir, unusual bargain. Limited quantity. At dealers or send $1.98

WHOLESALE IMPORT CO. Dept. B, 604 Marengo, Alhambra, Calif.

How to Make Money in PHOTOGRAPHY

Unique, low-cost LEARN-BY-DOING method and INDIVIDUAL attention trains you quickly at home in spare time. Start making money in photography at once! We show you how. Our **43rd** year. Big FREE colorful book gives full facts. Write TODAY! Resident Training also available.

NEW YORK INSTITUTE OF PHOTOGRAPHY
Dept. 5, 10 W. 33 St., New York 1, N.Y.

A "GOOD HAND" HELPS YOU SUCCEED!

LEARN TO WRITE WELL

Your Name *beautifully written, plus special pen-point for shaded writing,* *Only 10¢*

OUR 53rd YEAR

Handwriting quickly improves with our easy-to-understand picture lessons! Put your spare time to good use; send today for ☐ FREE BOOKLET, "How to Become a Good Penman," or check volumes wanted below at $1 each: ☐ Business Writing ☐ Artistic Writing ☐ Card Writing ☐ Bird & Design Flourishing ☐ Engrossing Alphabets. COMPLETE SET $4.50. Ask for price list of penman's supplies.

TAMBLYN SCHOOL of PENMANSHIP
S. A. Ziller, Pres. 438 Ridge Bldg., Kansas City, Mo., USA

Secrets of VENTRILOQUISM *Now Revealed!*

Easy to learn in 60 to 90 days with our Home Study Course. **RESULTS GUARANTEED.** Make Money! Be Popular! Have Fun! Big Opportunity! Radio, Television, Stage Appearances! For Free Information regarding price and terms, WRITE. You must state your age. Dummy Catalog 25¢.

FRED MAHER SCHOOL OF VENTRILOQUISM
Box 36, Studio 1 Kensington Station
Detroit 24, Michigan

High School at Home

Many Finish in 2 Years

No classes. No time wasted going to and from school. Progress as fast as your time and abilities permit. Standard H. S. texts supplied. Thousands enroll each year in this 55-year-old school. Send for FREE descriptive booklet.

AMERICAN SCHOOL, Dept. H246
Drexel at 58th St., Chicago 37, Ill.
Without obligation, please send FREE descriptive booklet.

Name.....

Address.....

Copyrighted material

I have a good proposition for men or women who would like to make an extra $125.00 a month for spare time

By F. G. Strong

These 15 Utensils and covers are all interchangeable. They fit into each other so as to make up 21 different cooking combinations for "Waterless Cooking." The four extra egg cups and the Spoon and Cake Turner make a 19-piece set that covers 99% of all cooking needs.

I won't make any fancy promises of $50.00 a day. And I'm not after any of your money. What I can do is show you a simple plan by which you can pick up enough extra money every week to help make up for the money you're losing in higher taxes and higher costs of living. And I supply your working outfit free—no charge and no deposit. Just your name is all I need. Read my proposition. It is honest and down to earth. And it won't cost you anything to try it.

TODAY almost everyone needs extra money. Increased taxes and increased living costs are making your dollar worth less and less, so you have to have more and more dollars just to keep even. There are lots of good ways to make extra money. I don't say my way is the best. I do say it's one of the easiest and most pleasant. It even leads to making new friends in sort of an endless chain. It doesn't call for house-to-house canvassing, either. Let me explain:

I am Sales Manager for a very big company. We make stainless Steel Cooking Utensils. We do an enormous business with hotels, restaurants, hospitals, and institutions. We also make utensils for the Army, Navy, and Air Force.

As a result, we have very low manufacturing costs. We can **sell** a set of Stainless Steel Cookware for home use for about what it costs some companies **to make it!** In fact, for years we did sell to one Sales Organization who resold our cookware house to house under their own name. They got $120.00 for the same set that our people sell for less than half of that.

You've probably heard of salesmen who give dinner parties in homes and then take orders from the ladies who attend. These salesmen have to get a high price because it costs money to give parties—he has to make his share—and his supervisor has to make his. The sales organization comes in for a share and the manufacturer who sells to them has to make his. So there are about five profits added to the actual manufacturing cost.

About two years ago I got to figuring. There are five good reasons why Stainless Steel is the kind of cookware that should be in every home. 1. It washes as easy as a drinking glass. No scouring, scraping or scrubbing. 2. It doesn't rust or corrode—and it doesn't stain. 3. It doesn't affect the taste of food. 4. Buy it once and you're all through buying for life. You **can't** wear it out.

You see, Stainless Steel is not a coated or plated metal, like chromium plate on the bumper of your car. That chromium plate can chip or wear off and exposes the raw steel underneath. Then the steel rusts. But our kind of Stainless Steel is stainless **all the way through.** It can't chip, crack, peel, or wear off. You could use a set the rest of your lifetime and then give it to your children and it would still be good for **their** children. 5. Carlton Ware enables you to prepare food by the method called "waterless cooking" which keeps more of the natural minerals and vitamins in your food and makes the food taste better.

Well, I figured that if the price was low enough every family could afford Stainless Steel Carlton Ware. So I worked out this plan! We would sell a complete set of 19 pieces at a figure that would include our profit. Then you add your profit and re-sell this set to your friends and neighbors for less than half of the usual price charged on the "party plan." You actually save them more than half. They are glad to get such a bargain and they feel that you've done them a real favor. That's because the set they buy has in it only two profits, ours and yours. Both our profit and your profit is small and fair.

The plan becomes like an endless chain. When a woman gets her first piece of Carlton Ware she gets so thrilled with its better cooking and easy cleaning that she talks and talks. She can't wait to demonstrate it to her friends and tell them all about it. She's so proud of its silvery sheen and so happy about how easily it washes that she just "bubbles over." So just by letting **your own friends** in on a good thing, before you know it **their** friends call you up and ask if you can get the same low prices for them. Then **their** friends call you and their **friends' friends.** It goes on and on!

To make an extra $125.00 a month, you only have to deliver ten sets and that's easy. Mrs. Montell in Pennsylvania took orders for $1400.00 worth in her first month. And Mrs. William Hanchow wrote, "Got my set Saturday—I already have 17 customers."

Now, I'll let you in on another part of my plan. If you take only ten set orders a month for six months my company pays your expenses for a winter vacation in Florida. You and one other member of your family can spend a whole week at our expense. My company maintains a beautiful resort in the Florida Keys just so our sales representatives can enjoy a Florida vacation at company expense.

Get all the information right now. I'll not only be glad to send Free Information. I'll also send you a complete demonstrating outfit that you can show to your friends and neighbors. And I'll give you exact instructions by which you can write up orders without ever trying to "sell" and without making any house-to-house calls.

Everything I send you is free. When you qualify, I'll even furnish you with a complete 19-piece set of Carlton Ware to use in your own kitchen and show to your friends. It's an extra bonus I give to encourage good earnings on your part.

Send your name today in confidence. You'll be glad you wrote. This ad may not appear in this magazine again, so don't take any chances on losing out. Send the coupon or just send your name on a postcard. I won't send any salesmen to call on you and you won't be under the slightest obligation.

F. G. STRONG

Carlton of Carrollton—Carrollton, Ohio

F. G. Strong, Carlton of Carrollton
Carrollton, Ohio

Dear Mr. Strong: Please send me free and without any obligation whatever a complete selling and demonstrating outfit with exact instructions for making an extra $125 a month. I don't want to do any house-to-house selling, but I will show your products to my friends and give them the advantage of the low prices.

Name.....

Address.....

City.....*Zone*.....*State*.....

☐ I am already selling Cookware and am interested in getting a line that can be sold at a lower price. Please send me your Distributor's proposition.

Copyrighted material

EARN MORE IN DRAFTING

MORE OPPORTUNITIES *for* EMPLOYMENT and PROMOTION

"Here I am at work making good money as a draftsman. I'm glad I sent the coupon to Chicago Tech for that Free Trial Lesson and found out how easy it is to learn Drafting in spare time at home. Today I feel secure in my job because the draftsman's work comes first on any new project. And, in addition, draftsmen can't be replaced with machines. What's more, I feel I'm slated for promotion and more pay, because I see so many draftsmen advancing to high-pay jobs."

LEARN IN SPARE TIME—AT HOME!

(or at the College in Chicago)

A few hours of pleasant home study every week—that's all. No interference with your present job. All the tools you need; drawing outfit included. With Chicago Tech's help, you train yourself step by step. This tested method—developed over 48 years of C.T.C. progress—prepares men quickly for good positions in industry.

FREE INFORMATION — SEND COUPON

To prove to you how easy it is to learn Drafting at home by the Chicago Tech method, we will send you this FREE TRIAL LESSON. No charge for this lesson, now or later. Fill out and mail coupon, or send post card today.

CHICAGO TECHNICAL COLLEGE

B-221 Tech Bldg., 2000 So. Michigan Ave., Chicago 16, Illinois

Mail me FREE Lesson with information about big opportunities in DRAFTING.

Name.....Age.....

Address.....

City.....Zone....State.....

SAVE YOUR HAIR

Beware of your itchy scalp, hair loss, dandruff, head scales, unpleasant head odors! Nature may be warning you of approaching baldness. Heed Nature's warning! Treat your scalp to scientifically prepared Ward's Formula. Millions of trouble-breeding bacteria, living on your sick scalp are killed on contact. Ward's Formula kills not one, but all four types of these destructive scalp germs now recognized by many medical authorities as a significant cause of baldness. Kill these germs—don't risk letting them kill your hair growth.

ENJOY THESE 5 BENEFITS IMMEDIATELY: ● KILLS these 4 types of germs that retard normal hair growth—on contact **● REMOVES** ugly infectious **dandruff**—fast **● BRINGS** hair-nourishing blood to scalp—quickly **● STOPS annoying scalp itch and burn**—instantly **● STARTS** wonderful self-massaging actions—**within 3 seconds.**

Once you're bald, that's it, friends! There's nothing you can do. Your hair is gone forever. So are your chances of getting it back. But Ward's Formula, used as directed, keeps your sick scalp free of itchy dandruff, seborrhea, and stops the hair loss they cause. Almost at once your hair looks thicker, more attractive and alive. We don't ask you to believe us. Thousands of men and women—first skeptical just as you are—have proved what we say. Here is our Guarantee—it's better than a free trial! Try Ward's Formula at our risk. Use it for only 10 short days. You must enjoy all the benefits we claim—or we return not only the price you pay—but DOUBLE YOUR MONEY BACK. You be the judge! Send name and address. Pay postman $2 plus postage, or send $2 with order and we pay postage.

WARD LABORATORIES, 1430 Broadway, N. Y. 18, Dept. SW-2.

EAT ANYTHING WITH FALSE TEETH

If you have trouble with plates that slip, rock and cause sore gums—try Brimms Plasti-Liner. One application makes plates fit *snugly without powder or paste,* because Brimms Plasti-Liner hardens permanently to your plate. It relines and refits loose plates in a way no powder or paste can do. Even on old rubber plates you get good results six months to a year or longer. **YOU CAN EAT ANYTHING!** Simply lay soft strip of Plasti-Liner on troublesome upper or lower. Bite and it molds perfectly. *Easy to use,* tasteless, odorless, harmless to you and your plates. Removable as directed. Plate cleaner included. Money back if not completely satisfied. If not available at your drug store, send $1.25 for reliner for 1 plate.

PLASTI-LINER INC., Buffalo 11, New. York — Dept. 41-K

BRIMMS PLASTI-LINER
THE PERMANENT DENTURE RELINER

• • A SHOE BUSINESS IN YOUR HAND! • •

EARN $60 WEEKLY WITH ONLY 3 SHOE ORDERS A DAY!

Make more money with famous 30 year old company. Show complete line quality shoes for men, women, children. Commissions to $4.00 per pair, PLUS Cash Bonus to 75c per pair, PLUS Paid Vacation! Smash hit styles with magic comfort heel-to-toe cushion are selling dynamite. No experience or investment needed. Actual shoe samples supplied without cost. Write TODAY for full information and FREE 76 page Spring Catalog.

THE BIGGEST SELLER IN 30 YEARS

TANNERS SHOE CO., 213 Boston 10, Mass.

AUTO SHOCK ELIMINATOR

No More Shocks Due to Static Electricity in Car or Truck

- Fits all Cars.
- Very Simple to Install
- Improves Radio Reception in Your Car as It Eliminates Static.
- Fits all Home Appliances, Washers, Dryers, Ironers, Freezers, Stoves, etc.
- Reduces Fire Hazards in Car or Home.

Yours for only $1.00 Mailed prepaid

Money Back Guarantee. Sorry, No C.O.Ds.

Send Now to → NO SHOCK, 1915-B Archer Ave., Chicago 16, Ill.

STUDY AT HOME

WITH AN EDUCATIONAL INSTITUTION

Courses in ARTS AND SCIENCES: Philosophy; Education; Letters; Public Health; Medical Jurisprudence; Psychology; Sociology; Physics; Chemistry; Geology; Pol. Science; Theology; Law; Business and Commerce; Accounting; Mathematics; Statistics; Agriculture. **ENGINEERING:** Electrical, Civil, Mechanical, Drafting, Architectural, Steam, Diesel, Aeronautical, Radio, Structural, Mining, Industrial, Petroleum, Refrigeration, Air Conditioning, Chemical. Send for free catalog.

McKinley-Roosevelt Incorporated, 4610-A3, Sheridan Rd., Chicago 40, Illinois

I'll Send You This Handsome SAMPLE CASE-FREE

and Show You How to Make Up to $15.00 in a Day

WRITE for this FREE Tailoring Sample Case packed with 150 beautiful, big-value suit and overcoat fabrics. Take orders from friends, fellow-workers, others, for fine quality, made-to-measure clothes. Pocket big cash profits in advance. Because wearing our suits and overcoats brings more orders, we make it easy for you to get your own clothes without 1c cost. No experience is needed. SATISFACTION GUARANTEED. SEND NO MONEY. Rush your name, address, and age—today!

J. C. FIELD & SON, INC., Harrison & Throop Sts.
DEPT. S 1720 - CHICAGO 7, ILLINOIS

Copyrighted material

NOW FOR THE FIRST TIME

You will know your car's actual horsepower
You will know the condition of your brakes
You will know when your wheel alignment is "off"
You will know the gasoline best suited for your car
You will be able to check the results of an expensive repair job on your car

PERFOMETER

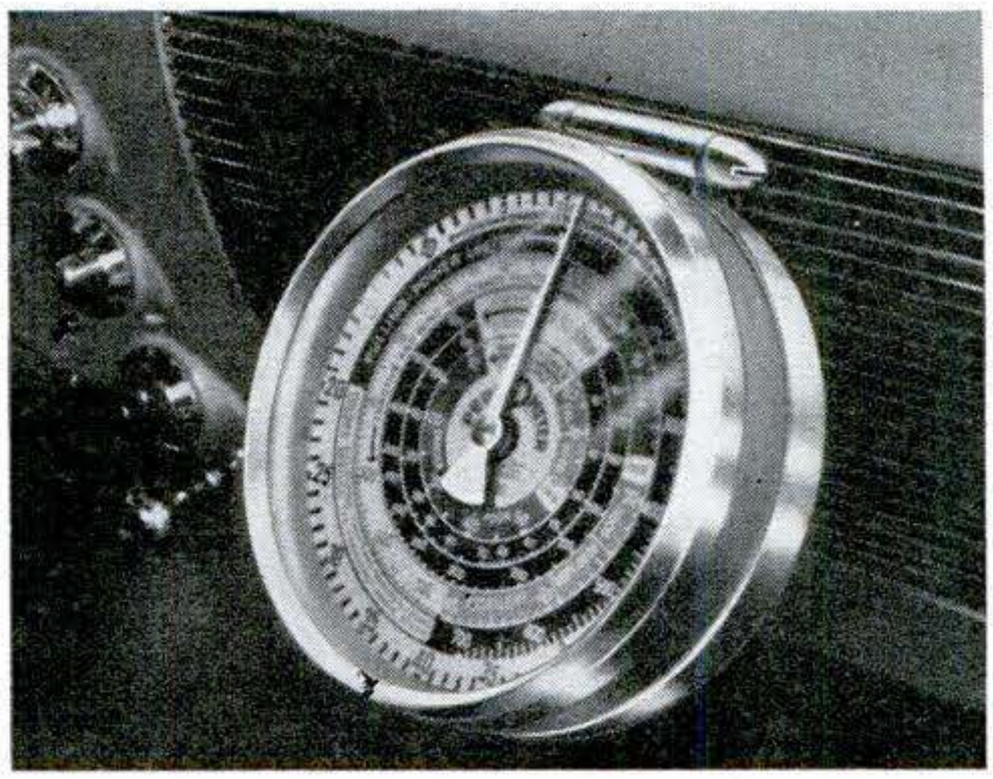
TRADE MARK

the Complete Car Test Instrument

for Performance Minded Drivers

THE FIRST "ON THE CAR" INSTRUMENT GIVING ACTUAL HORSEPOWER!

PerfOMeter, a new testing device gives you these answers, and many more, quickly and accurately.

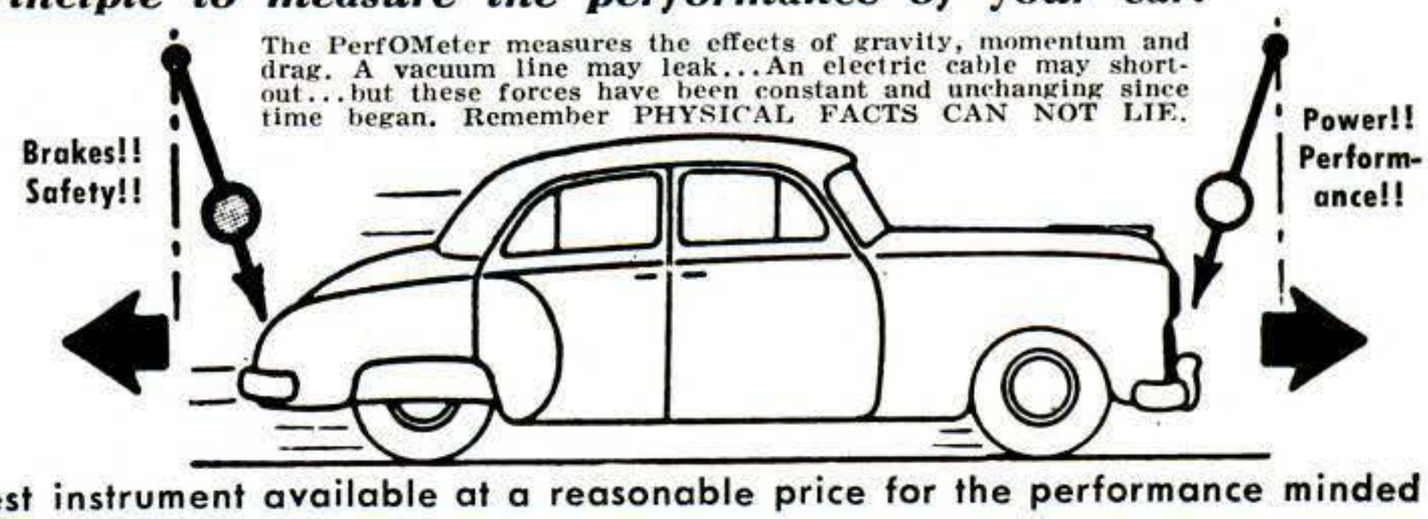


PerfOMeter gives the real story on every factor in your car's operation. You can now do your own road tests. PerfOMeter is the only "on the car" instrument giving actual horsepower. We like the description of it by the enthusiasts at Motorama . . . "the pocket sized dynamometer." Actually the readings obtained will be more accurate than those obtained on a regular service station dynamometer as the tests are made under actual road conditions and not subject to the roller slippage experienced on dynamometers.

It may look like a vacuum gauge, but it isn't. Instead, it's a clever instrument that uses a time-tested principle to measure the performance of your car.

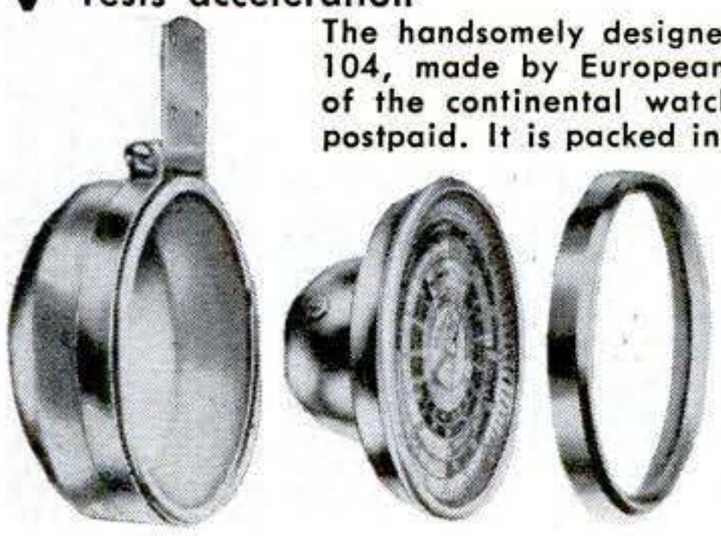
YOU CAN ROAD TEST

...your own car!



PerfOMeter is the one and only complete test instrument available at a reasonable price for the performance minded driver. At a glance it gives the following precise information on your car.

- ✓ Actual road horsepower
- ✓ Shows best gas for "Your" car
- ✓ Trouble shooting and tune up
- ✓ Tests acceleration
- ✓ Shows wind and rolling resistance
- ✓ Pick up ratings
- ✓ Shows brake efficiency in percent
- ✓ Stopping distances in feet
- ✓ Pin-points wheel alignment
- ✓ Measures engine pulling power
- ✓ Tests hill climbing ability
- ✓ Shows exact road grades



The handsomely designed PerfOMeter De Luxe Model 104, made by European craftsmen with the integrity of the continental watchmakers art, sells for $22.50 postpaid. It is packed in a beautiful multi-colored gift box and comes complete with a chrome dash mount and a chrome steering column bracket. A comprehensive 64 page illustrated book giving road test figures on all important American and Foreign cars and covering all phases of road testing is included free with every PerfOMeter.

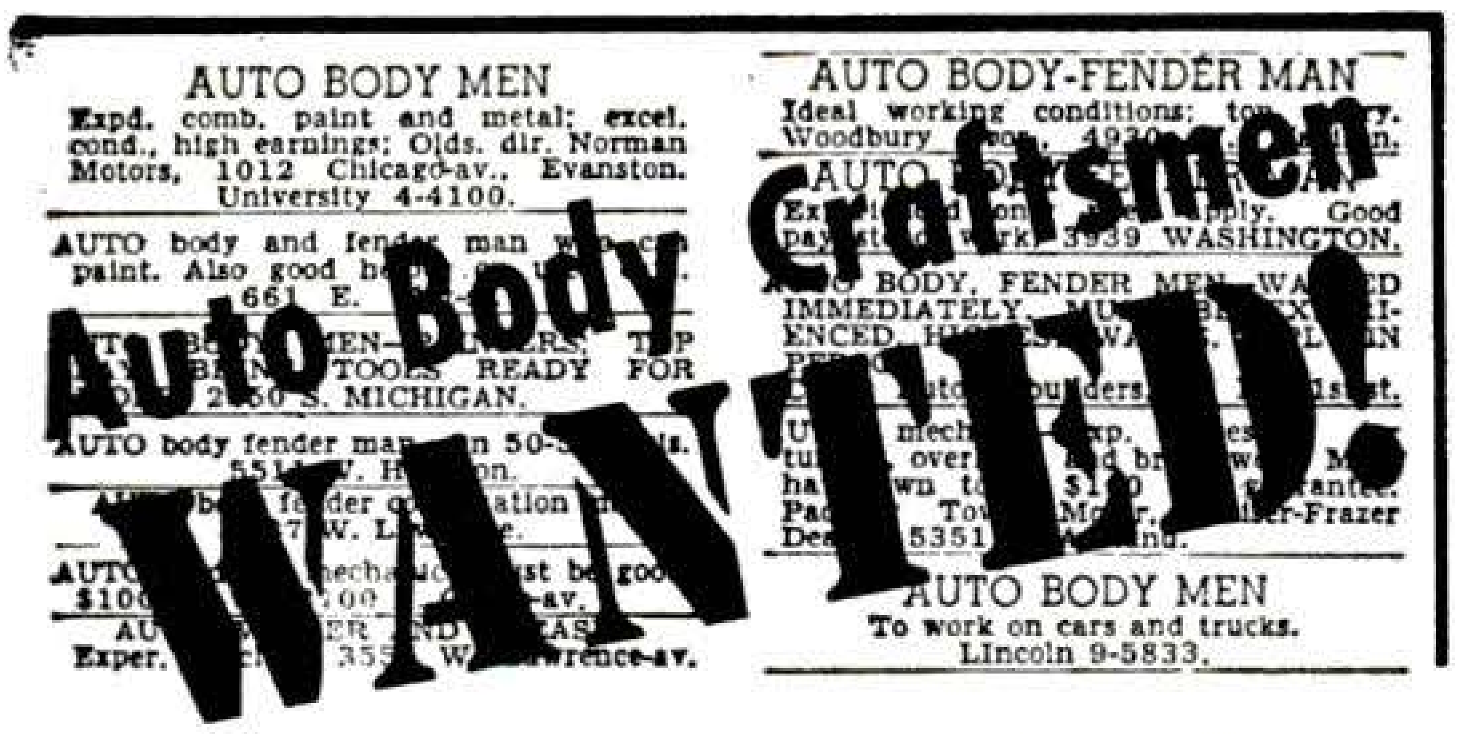
Send your order today

AUTOSPHERE CORPORATION
551 Fifth Avenue • New York 17, N. Y.

Please send..... .....DeLuxe Model 104
PerfOMeters at $.....
Name.....
Address.....
City.....Zone.....
State.....
☐ Check enclosed ☐ C.O.D.

Jobbers inquiries invited.

Copyrighted material



Learn This Craft–Earn Big Money

Look at the Help Wanted ads in your paper. The billion-dollar auto repair trade needs trained men NOW! The demand is big . . . pay is big . . . opportunities are great. You have a chance to grow with this growing trade, perhaps set up **your own profitable shop.**

CASH IN ON YOUR SPARE TIME!

You can begin your Auto Body & Fender Training at home in spare time with the **proven** UEI plan. You learn about appearance reconditioning, metalwork, painting, welding, other practical phases without leaving your present job. Then get actual practice in our large, well-equipped shops, repairing wrecked cars under the guidance of skilled instructors. Get FREE book and all the facts by sending coupon NOW!

UTILITIES ENGINEERING INSTITUTE Auto-Crafts Div. **2523 Sheffield Ave., Dept. XM-19, Chicago 14, Ill.**

MAIL TODAY FOR FREE FACTS

UEI *has been training men for industry since 1927.*

Auto-Crafts Div.
UTILITIES ENGINEERING INSTITUTE
2523 Sheffield Ave., Dept. XM-19, Chicago 14, Ill.

YES! Rush FREE Book and full facts on Auto Body & Fender Repair Training.

Name.. Age..........

Address ....

City.................... Zone or County.............. State..........

( ) Check for special information if under 17.

New Amazing Invention—"Magic Art Reproducer"

DRAW THE FIRST DAY!

NO LESSONS! NO TALENT!

Anyone Can Draw With This Amazing New Invention—Instantly!

Complete for only $1.98

You Can Draw Your Family, Friends, Anything From REAL LIFE—Like An Artist Even if You CAN'T DRAW A Straight Line!

Also Excellent for Every Other Type of Drawing!

• Human Figures • Outdoor Scenes, landscapes, buildings • Still life, vases, bowls of fruit, lamps, furniture, all objects • Copy photos, other pictures, portraits, etc. • Copy blueprints, designs, decorations, etc., for woodwork, machine, for needlework, crocheting, knitting • Copy all cartoons.

Yes, anyone from 5 to 80 can draw or sketch or paint anything now . . . the very first time you use the "Magic Art Reproducer" like a professional artist—no matter how "hopeless" you think you are! Anything you want to draw is automatically seen on any sheet of paper. Then easily and quickly follow the lines of the "picture image" with your pencil . . . and you have an accurate drawing that anyone would think an artist had done. Also makes drawing larger or smaller as you wish. Anyone can use it on any desk, table, board, etc.—indoors or outdoors! No other lessons or practice or talent needed!

Have fun! Be popular! Everyone will ask you to draw them. You'll be in demand! After a short time, you may find you can draw well without the "Magic Art Reproducer" because you have developed a "knack" and feeling artists have—which may lead to a good paying art career.

FREE with order "How To Easily Draw Artists' Models"

This free valuable illustrated guide is packed with pictures showing all the basic poses of artists' models with simple instructions for beginners of art. Includes guidance on anatomy, techniques and figure action.

SEND NO MONEY! Free 10-Day Trial!

Just send name and address. Pay postman on delivery $1.98 plus postage. Or send only $1.98 with order and we pay postage. 10 Day Trial must satisfy or money will be refunded.

NORTON PRODUCTS, Dept. 4402B, 296 Broadway, N.Y.C.

INSURED TIRE SERVICE
POPULAR BRANDS

SPECIAL! Deduct 10% on orders for Two or More used tires

FREE INSURANCE POLICY given with each used tire sold. We guarantee the amount of service you pay for.

Tube Given Free with Each Used Passenger Tire Upon Request

YOU CAN'T LOSE!!

Super Quality — Rugged Performance — 15 Months Insured Service

600x16	$4.55	670x15	$5.25	700x16	$5.55	760x16	$6.35
650x15	4.95	670x16	5.35	710x15	5.45	820x15	6.45
650x16	5.45	700x15	5.40	760x15	5.95	550x17	4.75

Supreme Quality. Nothing Finer — 30 Months Insured Service

450x20	5.95	450x21	6.25	700x15(6)	10.45	750x16(8)	15.95
600x16	5.65	650x15	5.75	600x20	10.95	900x20	19.95
650x16	5.85	670x15	5.95	650x20	11.75	1000x20	20.45
700x16	7.75	700x15	5.75	700x20	12.50	1100x20	26.75
750x16	12.50	710x15	6.50	32x6(8)	11.95	1000x22	19.50
550x17	5.75	760x15	6.95	32x6(10)	12.75	1100x22	24.75
525x18	5.45	820x15	7.50	750x20	14.50	1200x20	23.50
640x15	5.75	475x19	5.75	825x20	21.50	1100x24	22.75

SNOW TIRES NO CHAIN PROBLEMS "Worry-Proof" Driving

600x16	10.95	670x16	11.75
600x15	11.45	700x15	13.95
640x15	11.45	700x16	14.95
650x15	11.95	710x15	13.95
650x16	11.95	760x15	14.95
670x15	11.95	820x15	15.95

NEW TIRE GUARANTEE

MIDLAND TIRE SALES **1141 W. Randolph St., Dept. SS-4, Chicago 7, Ill.** Speedy shipments on Mail Orders. F.O.B. Chicago. Insurance Policy sent with each order. Deduct 10% on orders for 2 or more used tires. Send CHECK or MONEY ORDER. No COD's.

LEARN TO DANCE $1.00

Why be a lonely, unpopular wall-flower?
Learn all the smart dances from the most modern to the old favorites—at home, in private without teacher, music or partner. So simple even a child can learn quickly. Tap dancing, Waltz, Collegiate, Samba, Rhumba, Jitterbug and many others, including illustrations. Complete course only $1.00. Also, delightful old square dances with illustrations for $1.00. Get each Separate or both for $1.98. If you order both take your choice of FREE-DREAM BOOK or LOVE LETTERS. C.O.D. orders 25c extra and Postage.
Superior professional taps, both toes and heels $2.98 prepaid or C.O.D. plus shipping charges. State size, large or small.

ROLLDEX, P. O. Box 516, Dept. D-85, Safety Harbor, Fla.

BECOME AN EXPERT IN
TRAFFIC

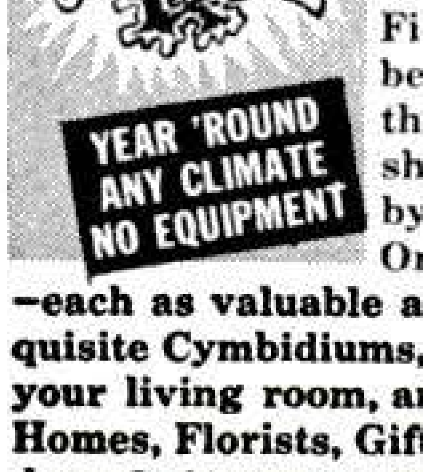
Traffic men earn $4,000 to $10,000 and up. Thousands of firms need experts on rates, tariffs, regulations. We train you thoroly in spare time at home for executive traffic jobs. Personal training under traffic authorities. Placement counsel and help. Write for free 48-page book "Traffic Management—the Fast Growing Profession."

LASALLE Extension University, 417 So. Dearborn St.
A Correspondence Institution, Dept. 283T, Chicago 5, Ill.

SEND FOR THIS FREE!

Make money. Know how to break and train horses. *Write today for this book FREE*, together with special offer of a course in Animal Breeding. If you are interested in Gaiting and Riding the saddle horse, check here ( ) *Do it today—now.*

BEERY SCHOOL OF HORSEMANSHIP
Dept. 582 Pleasant Hill, Ohio

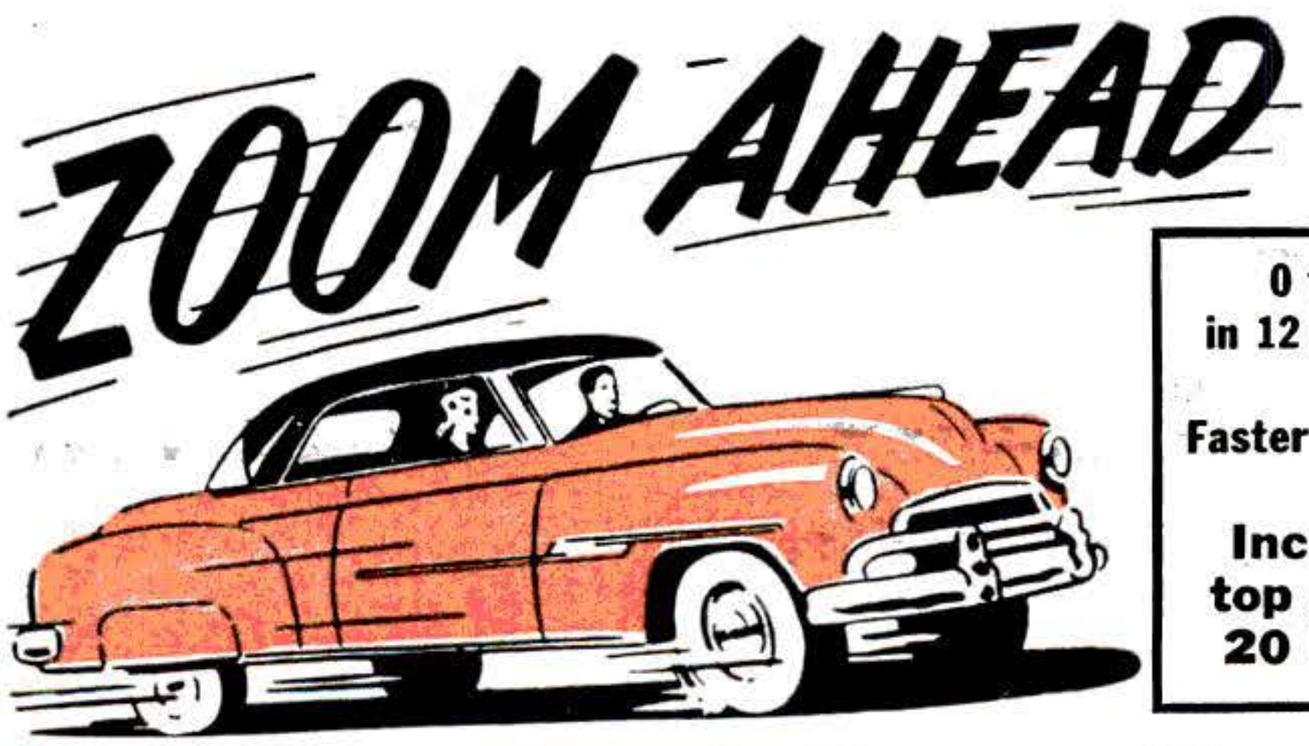


Fabulous Profits At Home...Raising
ORCHIDS

RAISE THEM AT HOME FOR PROFIT & PLEASURE. Fill your home with riotous color of these beautiful Tropical flowers. Louis Schirmer, the Dean of American Orchid Growers shows you how! World's most thrilling hobby—most profitable home business. A single Orchid plant may multiply into HUNDREDS **—each as valuable as the first. Raise gorgeous Cattleyas, exquisite Cymbidiums, amazing Epidendrums on a card table in your living room, any climate. Big-profit orders come from Homes, Florists, Gift Shops, Dept. Stores, Etc.—also Mail Orders. GROWING STOCK & INSTRUCTIONS SENT AT NO RISK. Complete, illustrated, step-by-step secrets of the experts in simple "show-how" language—INCLUDING Cattleyas, Cymbidium and Epidendrum plants—all you need to start at home. FREE—full details—SEND NO MONEY. Write today. TROPICAL FLOWERS, Dept.** 2E, **601 S. Vermont Ave., Los Angeles 5, California.**

Copyrighted material

NEW 1953 MANUAL SHOWS YOU HOW TO SQUEEZE 45 MILES ▶ FROM ONE GALLON OF GAS ◀



0 to 60 in 12 Seconds
●
Faster Get-Away
●
Increase top speed 20 Miles

Extra Pep, Speed, Power, Economy yours with ANY make car!

Raceway Secrets Revealed!

Here at last—after long careful preparation—the latest 1953 automotive manual that shows you how to save $$$ on gas, tires, repairs, accessories. This amazing book, hot off the presses is the NEWEST now available in America! It gives you the down-to-earth facts on how to get 30, 40, 50 miles on a single gallon of gas. No longer need you get rattled to see "tin can jaloppies" beat you at the light everytime . . . leave you in the dust on the highway! Now you can give your car greater pep, add up to 30 miles per hour to its top speed, surge ahead from 0 to 60 miles in 12 seconds flat. You can save hundreds of dollars annually, burn water with gas, extend car life by simple easy tricks, quickly recondition cylinder walls without removing the motor! It seems incredible but it's true! Many of these methods have been tested by huge industrial and oil firms, special laboratories, government bureaus. Some are used by the Army, Navy and Air Force. Some have come from the Indianapolis Speedway champions. Now this information is yours in the new 1953 book: "HIGH SPEED & EXTRA POWER"—hot off the presses.

Easy Pictures Show you How

No need to be a mechanic! Easy directions & clear pictures show you how to get more speed, extra power, greater economy with only a screwdriver. Tells of cheap gadgets that work miracles with any motor, a 1953 model or a junkyard derelict! Shows you how to SAVE up to $500.00 a year, increase resale value of your car, reduce repair costs.

Hundreds of Valuable Money Saving Secrets!

Here is some of the amazing information given you: 20 ways to save gas or oil; alcohol-air injection systems; mixing air & fuel; car super-charging ideas; speed and power tuning; how to increase top power & speed, get instant starts in winter, better pick-up on hills; 10,000 extra tire miles, make minor repairs yourself and save plenty, new plastic methods for removing body dents; new paints that go right over rust. **PLUS: HUNDREDS** of other ideas on adjustment & maintenance of your car inside and out! Thousands of wide-awake Americans have this money saving knowledge. Have you? Get your **"Higher Speed and Extra Power Manual"** now! Stop wasting gas and oil. Stop paying for sucker repairs! Get more power, more speed! Get faster get-away! Leave 'em in the dust with a higher compression car!

U. S. Gov't. Scientist reveals how to BURN WATER & SAVE GAS!

Here's only **ONE** of over a thousand secrets that show you how to get marvelous new power and save gas too! Make your own "Super-Charger" with a cheap mason jar and 15c rubber hose! So simple—so easy—yet it can actually save you up to 35% more gas! You'll be dazzled with the terrific new power you get with this moderate water injector!

DRIVE 8000 MILES WITHOUT OIL CHANGE

Do you need help to stop power waste? A quarter's worth of graphite will work wonders for you! This method used by thousands. Try it . . . you'll be amazed! There's over 1000 more ideas for you—easy to understand with pictures that show you how! Busy executives or ladies can let their service station or attendant make many changes shown in this book. Most fellows, however, prefer to have the fun and satisfaction of doing it themselves. After all it's so simple with the easy instructions & step-by-step pictures! Remember, you must be satisfied or this manual costs you nothing!

FREE

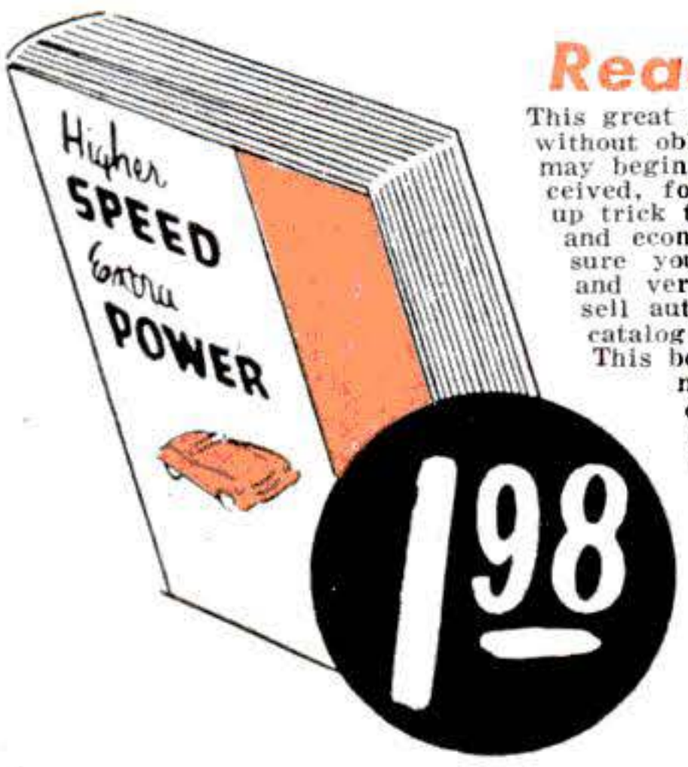
even if you return manual!

1 Pocket **"TROUBLE SHOOTER"** helps you find cause of motor defects, with repair advice.

2 **"SAVE ON ACCESSORIES"** — saves you plenty on tires, accessories, gadgets. Not a catalog—absolutely impartial.

3 **"ECONOMY DRIVING TECHNIQUE"** —tells about famous Indianapolis driving techniques that gave 150 miles per gallon!

4 **"33 WAYS to Increase Trade-in Value"**. May be worth hundreds to you! Stock limited! Rush coupon TODAY for 7 day trial.



Read it at our risk!

This great new book is yours to try 7 days without obligation! Only **ONE** of its ideas may begin to save you money the day received, for instance: a screwdriver tune-up trick that gives you added power, pep and economy—in a few minutes! But be sure you get the genuine **ORIGINAL** and very latest! Remember: We don't sell automotive supplies! This is not a catalog! No "coupons"! No deception! This book tells **THE TRUTH.** Send no money. Pay only **1.98** plus post. on arrival. Read 7 days at our risk. Let **RESULTS** talk for themselves. You must be delightfully surprised or your money back! Act **NOW!** Mail coupon today!

MAIL COUPON

SPEEDWAY BOOKS
127 West 33rd Street, Dept. 7-SB, New York 1, N. Y.

RUSH HI-SPEED & EXTRA POWER manual on 7 day trial, money-back guarantee. I will pay **1.98** plus postage on arrival. Also send **FREE** the following: "Trouble Shooter", "Save on Accessories", "Economy Driving Technique" and "33 Ways to Increase Trade-In Value", mine to keep even if I return manual for refund.

NAME .....

ADDRESS .....

TOWN ..... STATE .....

☐ **SAVE MORE—GET MORE** by sending $2 check, m.o. or cash, in which case we pay postage and include **MOTORISTS' COMPASS** at no extra cost. Same money-back guarantee!

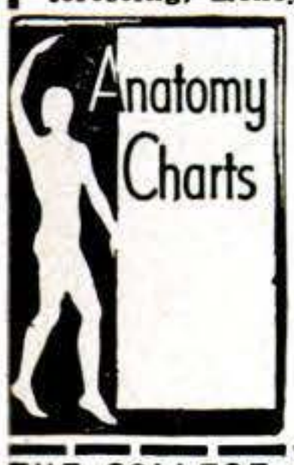
Copyrighted material

Learn this Profitable Profession

IN 90 DAYS AT HOME

Money-Making Career Open to Men and Women, 18 to 60

Hundreds of men and women between 18 and 60 make $10 to $20 in a single day giving scientific Swedish Massage and Hydro-Therapy treatments. There is big demand from doctors, hospitals, sanatoriums and clubs. Graduates earn large full time incomes from these or in private practice in their own offices. Others make good money from home treatments given in spare time. Learn this interesting, money-making profession in your own home, through our home study course. Same instructors as in our **nationally known** resident school. **You** can win independence and prepare for future security by qualifying for your Graduation Certificate. Course can be completed in 3 to 4 months. Many earn while they learn. Begin **your** training at once.



NEW 32-PAGE BOOKLET *FREE*

Fill in the coupon below (please print name and address) and mail it for your FREE copy of 32-page Information Booklet. If you act at once we will include Anatomy Charts and Success Booklet which supply additional information you should have. All will be sent postage paid.

THE COLLEGE OF SWEDISH MASSAGE
Dept. 370B, 41 E. Pearson St., Chicago 11, Illinois

Please send me FREE and postpaid New 32-Page Illustrated Booklet. Anatomy Charts and Success Booklet at once.

Name.....Age.....

Address.....

City.....State.....

THIS.... 120 PAGE GUIDE FOR AMBITIOUS MEN

FREE!

Have You Had Your Copy?

120 pages of guidance to best-paid positions. Up-to-the-minute information for men who want to climb to the top. Tells how to get promotion, security and better pay through home study courses. This handbook "Engineering Opportunities" is free and entirely without obligation. Send the coupon. Make this your big year! Describes over ninety courses including:

Mechanical	Electrical	A.F.R.Ae.S.
Aeronautical	Radio	A.M.I.C.E.
Television	Automobile	B.S. (Pure
Building	A.M.I.Mech.E.	Science)

--- SEND COUPON TODAY ---

Canadian Institute of Science & Technology Limited, 558 Century Building, 412, 5th Street, N.W., Washington, D.C.

Please forward free of cost or obligation your handbook, "ENGINEERING OPPORTUNITIES".

Name.....

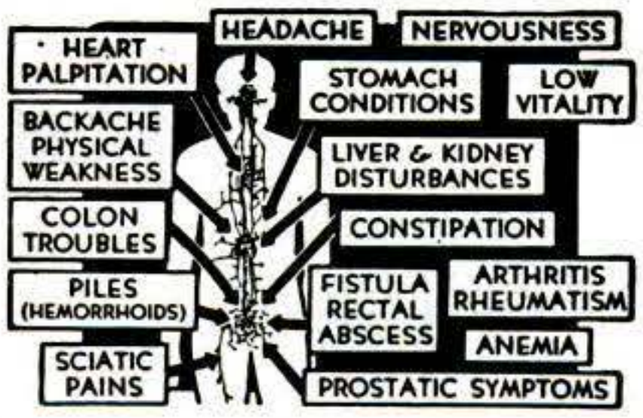
Address.....

Course interested in.....Age.....

Canadian Address: Canadian Institute of Science 558 Garden Building, 263 Adelaide St. W., Toronto, Ont.

Fistula Is Real Threat

FREE BOOK—Explains Other Related Ailments



40-page FREE BOOK—tells facts about Fistula, Rectal Abscess, Piles and other rectal and colon disorders; also related ailments and latest corrective treatments. Thornton & Minor Hospital, Suite 249, 911 E. Linwood, Kansas City 9, Mo.

2-BEDROOM HOME $890

BUILD YOUR OWN

Living room 12x14. Master bedroom 10x12. Nursery-den 10x11. Kitchen 7x10. Bath 5x8. Concrete block built. Blue prints, material lists, exact instructions for 3 designs. Complete $1 ppd.

SUNNY-CAL HOMES, Box 309-E2, Hollywood 28, Calif.

Watch Repairing Pays Big Money Learn at home

Watch repairers in great demand. Train step-by-step in 10 easy lessons. We furnish all tools and 15 jewel watch and practice movement. Turn spare time into cash. A licensed school. Low cost. Send for FREE book today.

ILLINOIS SCHOOL OF WATCH REPAIRING
2870 Elston Ave., Dept. PS-23, Chicago 18, Ill.

FREE CRAFT CATALOG

120 PAGES... Craft Supplies, Tools, Designs, Instruction Books from America's Largest, Most Complete Handcraft Stock.

Send for your free copy NOW!

GRIFFIN CRAFT SUPPLIES
5626-B Telegraph Ave. • Oakland 9, Calif.

A NOTE TO THE MAN WHO WEARS

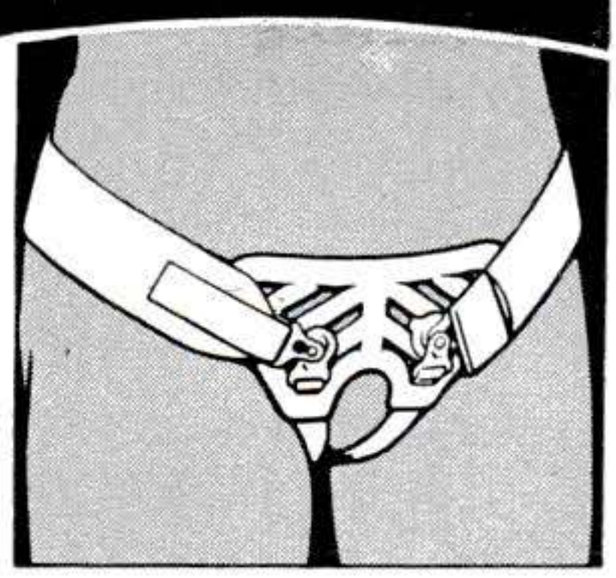
LARGE SIZE SHOES

Dear Sir,
If you wear **SIZES 10-16, WIDTHS AAA-EEE**, America's foremost specialists in extra-size shoes GUARANTEE you perfect fit! World's largest selection of handsome styles including new **CUSH-N-CREPES**. Comfort, long wear, big savings GUARANTEED!
Send for **FREE CATALOG**.
Very Truly Yours,

KING-SIZE, Inc. 174 BROCKTON, MASS.

Copyrighted material

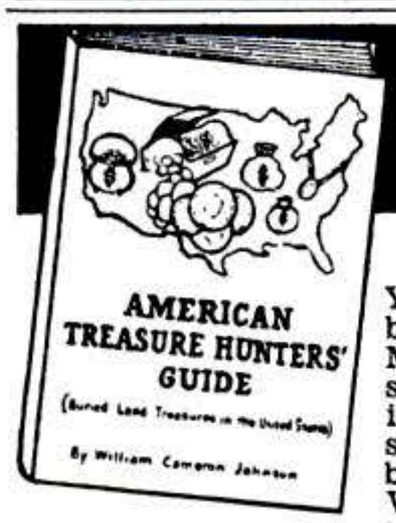
RUPTURED



Relief or Your Money Back!

You risk nothing to find out why thousands of rupture sufferers can now work and play in comfort with the help of the patented Web Truss.
No matter what truss you are wearing our free booklet on rupture care will help you. Write for it today.

WEB TRUSS CO.
DEPT. PS-2, HAGERSTOWN, MD.



BURIED TREASURE!
In Your Backyard

AMAZING BOOK JUST PUBLISHED TELLS OF LONG LOST FORTUNES

Yes, in your very own backyard—or near by—a fabulous treasure may be buried! Millions are lying around just waiting for someone to dig it up! And now, a fascinating 84-page guidebook gives 59 thrilling stories—and actual locations—of treasures buried in every section of the country. Valuable data and 57 maps gathered after years of research gives reported location of these treasures. It's the most extensive detailed treasure book ever written for the "week-end" treasure hunter! Tells all about History of Lost Treasure, equipment needed, laws regarding discovery. And it can mean untold riches for you! Over 70 million dollars worth of treasure value revealed! **SEND NO MONEY!** Order today. On arrival of your copy of "American Treasure Hunter's Guide" pay postman $2.49 plus C.O.D. postage. If cash sent with order, we pay postage. If not absolutely delighted, return within 7 days for full refund.

M. A. PRITCHARD, Dept. 48B, HOMESTEAD, FLORIDA

METAL REPAIRS?

Real metal-in-a-tube for 1001 shop and household repairs . . . everything from auto body dents to pipe joints! Use right out of tube, no heat needed. Only $1. Ask your dealer. Canada $1.25

HOLT'S LOY All-Purpose Metal Mender

CAR BURNING OIL?

Nothing's as good as a complete mechanical overhaul, but Holt's Piston Seal is the proved, low cost alternative that cuts oil consumption and increases power for up to 10,000 miles. Only $4.95. Canada $5.95.

HOLT'S Piston Seal Cylinder Compound

If your dealer cannot supply send check to us or write for free details.
TREGLOWN CO., INC., FANWOOD, 10, N. J.
IN CANADA: Treglown, Ltd., 1366 Greene Ave., Montreal 6

"I Can Succeed!"

"What other men have done through I. C. S. help, I can do. If I. C. S. has raised the pay of other men, it can raise mine. If their positions have been bettered, mine can be. To me, I. C. S. means 'I CAN SUCCEED!' "

GET the "I Can Succeed" spirit, for the International Correspondence Schools *can* raise your pay—whether you're making $2,000 or $20,000 a year, apprentice or executive, young or old, man or woman.

No matter where you live, what you now do, or how little time or money you may have, I. C. S. has a Course of Training to fit *your* exact needs.

Hundreds of thousands of ambitious men and women have achieved success through I. C. S.—over 100,000 are *now* studying, getting ready for the big jobs ahead. Join them and make your life something to be proud of —you *can* do it.

Mail the coupon TODAY and find out *how;* it won't obligate you in the least.

FREE BOOKS. We will be glad to send you catalog checked below plus "How to Succeed." 36 pages packed with worthwhile success tips. Step-by-step plan of action. Pocket-size. Just mail this coupon.

INTERNATIONAL CORRESPONDENCE SCHOOLS
Box 7630-N, Scranton 9, Pa.

Without cost, send me free book, "HOW TO SUCCEED," and free catalog on course checked.

- ☐ Accounting
- ☐ Aeronautical Engineering Jr.
- ☐ Aircraft Drafting
- ☐ Architecture
- ☐ Architectural Drawing
- ☐ Automobile Mechanic
- ☐ Auto-Elec. Technician
- ☐ Bookkeeping
- ☐ Building Contractor
- ☐ Business Administration
- ☐ Certified Public Accounting
- ☐ Chemical Engineering
- ☐ Civil Engineering
- ☐ Cotton Manufacturing
- ☐ Diesel Engines
- ☐ Diesel Locomotive
- ☐ Drafting
- ☐ Electrical Engineering
- ☐ Electrical Maintenance
- ☐ Electronics
- ☐ Foremanship
- ☐ Television
- ☐ General Radio
- ☐ High School
- ☐ Highway Engineering
- ☐ Hydro-Electric Power Plant
- ☐ Industrial Engineering
- ☐ Industrial Instruments
- ☐ Industrial Supervision
- ☐ Machine Shop Practice
- ☐ Mathematics
- ☐ Mechanical Engineering
- ☐ Mechanical Drafting
- ☐ Practical Accounting
- ☐ Practical Electrician
- ☐ Reading Shop Blueprints
- ☐ Reading Structural Blueprints
- ☐ Radio Servicing
- ☐ Railroad
- ☐ Railway Postal Service
- ☐ Salesmanship
- ☐ Stenographic-Secretarial
- ☐ Structural Engineering
- ☐ Textiles
- ☐ Toolmaking
- ☐ Tool Design
- ☐ Traffic Management

Other _____

Name _____ Age _____

Home Address _____

City _____ State _____

Occupation _____

Special tuition rates to members of Armed Forces. Canadian residents address International Correspondence Schools Canadian, Montreal.

Copyrighted mater

BREED *Rare* TROPICAL FISH

EARN BIG MONEY IN SPARE TIME

KISSING GOURAMI FISH IN HOME ACQUARIUM

IT'S EASY!

Once you learn the fascinating secrets you can breed: "Tetras" that LIGHT UP like Neon Signs. "Gourami" that are 12 DIFFERENT COLORS, "Fighting Fish" THAT FIGHT UNTIL DEATH, "Zebra Fish,"— hundreds of Beautiful Rare varieties. *Fabulous Profits possible!* Mail Order Plan

AMAZING NEW HOME—BUSINESS! WONDERFUL OPPORTUNITY! FASCINATING ADVENTURE once you know the "Secrets" of breeding and selling rare Tropical Fish. Some sell for $75 pair and more! NO BIG INVESTMENT—NO EXPERIENCE NECESSARY! It's fun to breed expensive fish in your home, basement, or garage. Takes only minutes per day. Earn extra money in leisure time once you know how. *We supply everything you need.*

GET INTO PARTNERSHIP WITH NATURE. Let Nature Multiply your profits for you. Some Fish lay 300—600 eggs at one time.

HELP FILL HUGE DEMANDS—from Stores, Hotels, Interior Decorators, Schools, Restaurants, Offices, Theatres, Doctors, etc. etc. Also over 20,000,000 Tropical Fish fanciers in the U. S. to sell to! *No big Companies to compete with.* Amazing opportunities for Home Breeders or Full-Time Breeders.

YOUR "CHANCE OF A LIFETIME" OPPORTUNITY. If you wish to combine pennies with spare time—to *make dollars in profit.*

HOME-BUSINESS PLAN

FREE!

Complete Illustrated Home—business plan, colorful Breeding Brochure, Reprints, etc., etc.

WRITE: TROPICAL FISH BREEDERS OF AMERICA
Dept. C 2, Los Angeles 15, Calif.
Rush everything free to:
Name _____
Address _____
City _____ State _____

SUCCESS • BIG PAY *in Aviation*

MASTER A&E MECHANICS

urgently needed

Maximum training in minimum time! Thorough, practical instruction backed by more than 25 years of aviation technical experience. Training authorized under G.I. Bill.

Write today!
Illustrated Catalog
Registrar, Dept. O91,
Miami 30, Florida

Embry Riddle *International* SCHOOL OF AVIATION

TRAIN IN MIAMI -- AIR CAPITAL OF THE WORLD

URANIUM ATOMIC ORE

Guaranteed **• RADIO-ACTIVE!**

$1 prepays generous sample. Not dangerous.

GRAND CANYON METALS CO.
621 W. Cherry Ave.
Flagstaff 1, Arizona

BOYS! MAKE YOUR OWN RADIO

Learn Interesting Details

Make your own simple, tubeless, batteryless Crystal Radio. SEND 25c for a GENUINE MELOMITE CRYSTAL with complete illustrated instructions for making your own set. Crystal sent postpaid with instructions and our own publication, "THE MAGIC CRYSTAL" which is full of news, diagrams, questions and answers of interest.

SEND 25c FOR YOUR CRYSTAL TODAY!

ALVA ALLEN RADIO Dept. PS-2 Clinton, Mo.

LEARN LOCKSMITHING

Learn Locksmithing and Keymaking from Experts in Your Spare Time at Home!

Age or physical handicap no disadvantage. Year-round, steady income in this permanent, respected field. Full or part time. Practical, illustrated lessons show you how to make money even while learning! All materials and special tools supplied. Send for FREE BOOKLET.

LOCKSMITHING INSTITUTE, Dept. PS-38
15 Park Ave. Rutherford, N. J.
Lic. by State of N. J. *V.A. Approved*

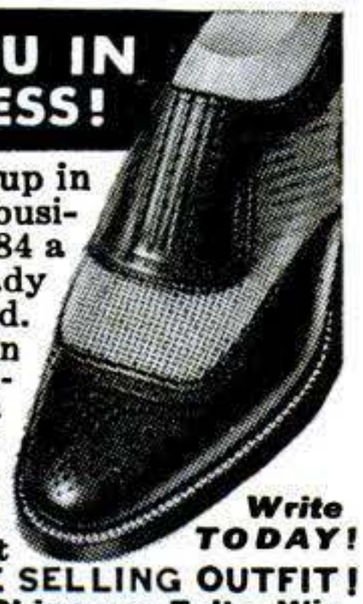
ANALYZE HANDWRITING

MORE INCOME... MORE PRESTIGE AND MORE SUCCESS!

FASCINATING, uncrowded profession-business, full or spare time. Free illustrated lesson and yearbook shows how men and women in home and business find opportunity in analyzing handwriting. *Understand People—Make Money.* Free lesson and information about amazing opportunities if over 21.

I.G.A.S., Inc., 810 Wilhoit Building, Springfield, Missouri

FREE OUTFIT STARTS YOU IN BIG MONEY SHOE BUSINESS!



We furnish everything FREE to set you up in your own profitable full or spare-time shoe business. Just 3 easy sales a day brings up to $84 a week EXTRA! Repeat orders mean big, steady profits. No experience or investment needed. You feature over 150 fast-selling styles in dress, sport, work shoes for men, women, including beautiful Nylon mesh shoes with Air Cushion innersoles. Also special kinds of shoes for different occupations. Amazing range of sizes, widths. Fit customers stores are unable to take care of. Start now by selling to friends, neighbors and relatives. EVERYONE is your prospect. Just send your name on postcard TODAY for **FREE SELLING OUTFIT!**

Write TODAY!

MASON SHOE COMPANY, Dept. MA-99, Chippewa Falls, Wis.

AMAZING NEW ASTRO-SCOPE* & TRIPOD

POWERFUL! ACCURATE! COMPLETE!

IDEAL FOR
- Astronomers
- Students
- Hobbyists
- Scouts
- Sportsmen
- Plane Spotters
- Target Spotters
- Mountain Climbers
- Sea & Land Observers

Sky High Value at a Down-To-Earth Price! Amazing New Astro-Scope* Combination — another Big "CRITERION FIRST"—A brilliant variable 20X, 40X, 60X, power adjustable eyepiece, 3 foot telescope, brass bound, with 4 precision lenses that will bring distant objects, moon, stars, ships and people 60 times closer. Can also be used as powerful compound microscope. All aluminum tripod with non-slip rubber tips. Universal mount makes easy, smooth adjustment to any position. FREE—108-page book "DISCOVER THE STARS". A marvelous complete all-purpose Instrument ready to use, all for the amazing price of $8.95.

*Reg. U.S. Pat. Office
Money Back Guarantee-Send Check or Money Order
DEPT. PSA2

$8.95 POST-PAID

CRITERION CO. **331 CHURCH ST. HARTFORD 3, CONN.**

Super TELESCOPE | Aluminum TRIPOD | Hi-Power MICROSCOPE | Astronomy BOOK

Copyrighted material

CAR OWNERS SHOVE $10 BILLS IN YOUR POCKET..

When you show them America's greatest auto seat cover values!

Including

BAMBOO

Newest Seat Cover Sensation!

FIESTA

BULLFIGHTER

BLACK EBONY

BIG MONEY, FULL OR SPARE TIME!

Want extra money—plenty of it day after day? Then rush your name and address at once for Free Sample Outfit that will start you taking orders from car owners everywhere for Key expertly tailored Auto Seat Covers. EXCLUSIVE NEW PATTERNS to fit every make and model car. No one can compete with you in wide choice, in quality—and in expert tailoring that makes covers fit like a pair of gloves. And when you quote prices that are only a fraction of what the customer expects to pay, brother! You make money hand over fist writing up the fast orders! Line includes nationally advertised sensations like BLACK EBONY Saran, in the new Black and Silver Watermelon Stripe, beautiful beyond description BAMBOO, luxurious. brilliant FIESTA, colorful BULL FIGHTER PLAIDS, plus many other exclusive patterns to choose from, all at unbelievably low prices. It's no trick at all to make *big* money whether you sell full time or just in spare time. OPPORTUNITY TO SELL AT WHOLESALE TO GARAGES, SERVICE STATIONS, ETC.

RUSH NAME FOR FREE OUTFIT

GIVE MAKE, YEAR AND MODEL OF YOUR CAR. No experience needed. Make all the extra money you need easily just by showing! Every car owner a "hot" prospect. YEAR AROUND STEADY PROFITS. No investment to make. Actual seat covers given to producers for OWN use! Write for Free Selling Kit and actual samples TODAY!

KEY PRODUCTS CORP., Dept. 6-B
800 NORTH CLARK STREET CHICAGO 10, ILLINOIS

KEY PRODUCTS CORP.,
Dept. 6-B
800 N. Clark St., Chicago 10, Ill.
Rush Free Sample Outfit at once. (If you own a car include the following information):

Make. . . . . Year. . . Model. . . .

Name_____

Address_____

City_____ State_____

Copyrighted material

YOUR HIGH-PAYING

interesting career in

TELEVISION

starts here!

HOME STUDY COURSE

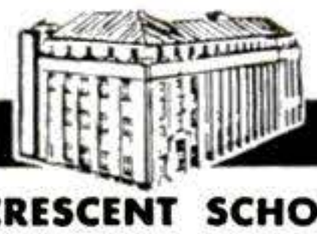
with one of America's **LARGEST** *schools*

There's a place for YOU in the tremendous, billion-dollar Television, Radio & Electronics industry! It's so easy to get started with the famous CRESCENT SCHOOL course. Learn in your spare time . . . illustrated, simplified lessons and kits to practice on. No previous training needed. Send for FREE sample lesson . . . make this day the day you started on your way to a brilliant career!

Complete parts kits included. Build your own TV SET!

APPROVED FOR KOREAN VETS

Also day & eve. classes trained at our school



SEND COUPON TODAY!

CRESCENT SCHOOL Dept. A2
500 Pacific Street, Bklyn. 17, N. Y.

Sirs: Rush your FREE sample lesson and full details about the CRESCENT SCHOOL Course—at no obligation to me!
Home Study Course ☐ **Residential Course** ☐

NAME _____

ADDRESS _____

CITY _____ ZONE ____ STATE _____

FIND OUT FREE!

HAVE YOU GOT WHAT IT TAKES?

...to become a CRIMINAL INVESTIGATOR FINGER PRINT EXPERT?

FREE BOOKLET OFFER

Everything to gain...nothing to lose. The famous, fascinating BLUE BOOK OF CRIME will give you examples of "what it takes" to track down outlaws and thieves. Read this exciting story of the triumph and battle of law and order against crime. THEN, decide for yourself if YOU have what it takes for exciting, steady, "good pay" work. OUR GRADUATES ARE KEY MEN in more than 800 Identification Bureaus.

Institute of Applied Science has been teaching finger print and firearms identification, police photography and criminal investigation for more than 30 years. No obligation. No salesman will call.

GET THE FACTS . . . FREE! Mail Coupon Today!

INSTITUTE OF APPLIED SCIENCE, Dept. 1362
1920 Sunnyside Ave., Chicago 40, Ill.
(A Correspondence School Since 1916)

Gentlemen: Without obligation or expense to me, send me the famous "Blue Book of Crime" absolutely free.

Name _____

Address _____ RFD or Zone _____

City _____ State _____ Age _____
You must state your age.

SQUARE DANCES
FOX TROT
SAMBA

Have Fun! Thrills! Romances!

Anyone Can Learn to DANCE

Why put off learning to Dance—NOW Here's a much EASIER WAY than YOU ever SAW!

RHUMBA—JITTERBUG

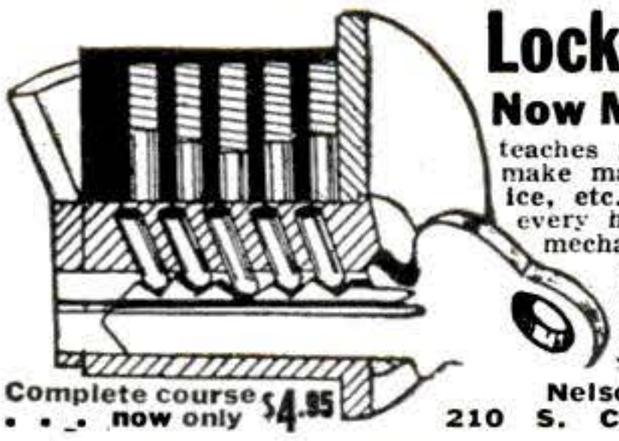
No longer do you have to sit and watch while others enjoy dancing . . . NOW you can join the fun! SURPRISE and AMAZE friends as you do the latest Dance Steps. Learn from simple lessons by Betty Lee, one of America's foremost dance authorities. 6 COMPLETE DANCE COURSES—Join the thousands who have learned to dance with the help of this amazing book. Full of simple, easy-to-follow illustrations.

Do This Step

You'll Dance in 5 Days

LEARN TO DANCE IN THE PRIVACY OF YOUR OWN HOME IN JUST 5 DAYS—OR PAY NOTHING! Order this exciting book TODAY. Learn to become a smooth dancer or return for refund. Only $1.98 postpaid or C.O.D. plus postage.

Pioneer Publications Inc. Dept. 872H
1790 Broadway, New York 19, N. Y.



Locksmithing AND KEY MAKING

Now Made Easy! **Practical up-to-date course**

teaches you how to pick locks, de-code, make master keys, repair, install, service, etc. New self-instruction lesson for every handyman, homeowner, carpenter, mechanic, service station operator, fix-it shop, hardware dealer, gunsmith. 53 easy illustrated lessons. Full price only $4.95, postpaid; or C.O.D. plus postage. Satisfaction or refund guaranteed.

Complete course . . . now only $4.95

Nelson-Hall Co., Dept. BX-1
210 S. Clinton St., Chicago 6, Ill.

You can play the GUITAR!

COWBOY-FOLKSONG STYLE

IN TEN EASY LESSONS WITH MY NEW, AMAZING, SIMPLE METHOD. KNOWLEDGE OF MUSIC IS NOT NECESSARY. IMAGINE YOURSELF PLAYING "HOME ON THE RANGE" IN JUST A FEW HAPPY HOURS OF PRACTICE. • • • • ONLY $1.00 (ADD 10¢ FOR POSTAGE) • • SEND TO PIERCE GUITAR METHODS-5812 MARKET ST. SAN DIEGO 14, CALIF.

HYPNOTISM

Learn to apply this tremendous POWER. Develop will-power, self-confidence, self-control. ANYONE can master this exciting profitable profession in short time by training at home, with GUARANTEED RESULTS. DON'T DELAY . . . Write to America's oldest Hypnotic school for free information now—today!

INSTITUTE OF APPLIED HYPNOLOGY
Dept. 22, 120 Central Park So., N. Y. 19, N. Y.

Happy Is The Day When Backache Goes Away . . . .

Nagging backache, loss of pep and energy, headaches and dizziness may be due to slowdown of kidney function. Doctors say good kidney function is very important to good health. When some everyday condition, such as stress and strain, causes this important function to slow down, many folks suffer nagging backache—feel miserable. Minor bladder irritations due to cold or wrong diet may cause getting up nights or frequent passages.

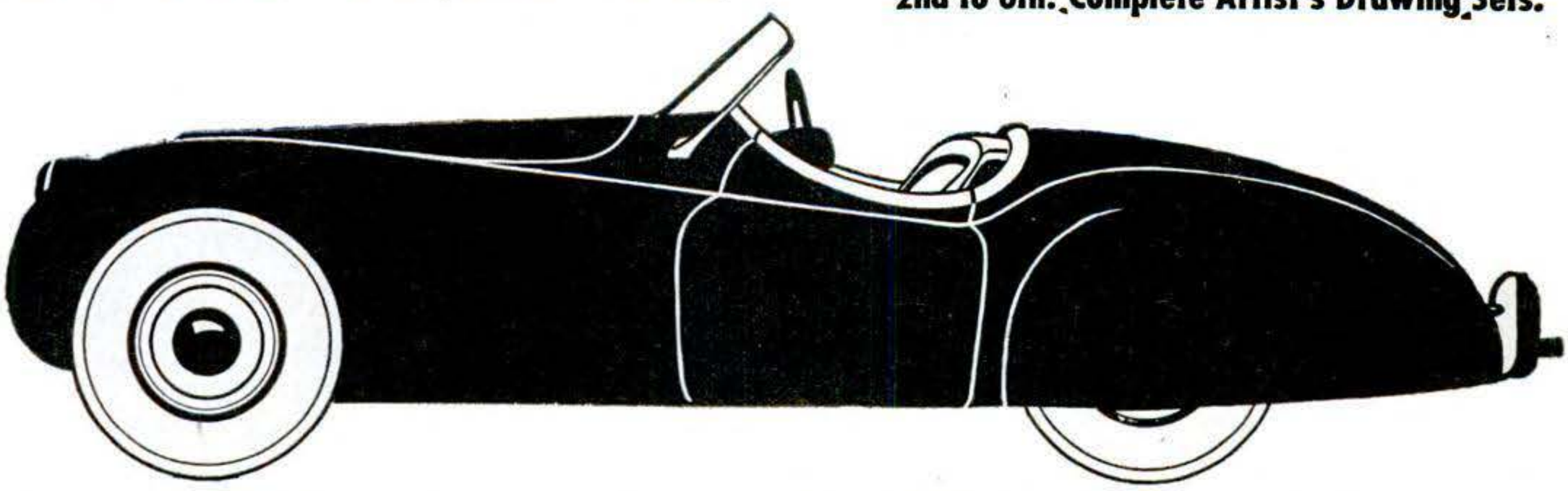
Don't neglect your kidneys if these conditions bother you. Try Doan's Pills—a mild diuretic. Used successfully by millions for over 50 years. It's amazing how many times Doan's give happy relief from these discomforts—help the 15 miles of kidney tubes and filters flush out waste. Get Doan's Pills today!

Copyrighted material

Draw This Car

FREE $295 ART COURSE

6 PRIZES! 1st: Complete $295 Art Course—
2nd to 6th: Complete Artist's Drawing Sets.



Here's your big chance, if you want to become a commercial artist, designer, or illustrator! An easy-to-try way to win FREE art training!

If your drawing shows promise we give you professional comments on it free! Trained illustrators, artists and cartoonists now making big money. Find out now if YOU have profitable art talent. You've nothing to lose—*everything to gain.* Mail your drawing today.

Amateurs Only! Our students not eligible. Make copy of car 8 ins. long. Pencil or pen only. Omit the lettering. All drawings must be received by March 31, 1953. None returned. Winners notified.

ART INSTRUCTION, INC., Dept. 2143
500 S. 4th St., Minneapolis 15, Minn.

Please enter my attached drawing in your Draw a Car contest. **(PLEASE PRINT)**

Name_____ Age____

Address_____ Phone_____

City_____ Zone____ County_____

State_____ Occupation_____

MEAT CUTTING OFFERS YOU SUCCESS And SECURITY

In The Best Established Business In The World · PEOPLE MUST EAT!

TRAIN QUICKLY in 8 short weeks for a job with a bright and secure future in the vital meat business. Trained meat men needed. Good pay, full-time jobs, year-round income, no lay-offs—HAVE A PROFITABLE MARKET OF YOUR OWN!

LEARN BY DOING

Get your training under actual meat market conditions in our big modern cutting and processing rooms and retail meat market. Expert instructors show you how—then you do each job yourself. Nearly a million dollars worth of meat is cut, processed, displayed and merchandised by National students yearly!

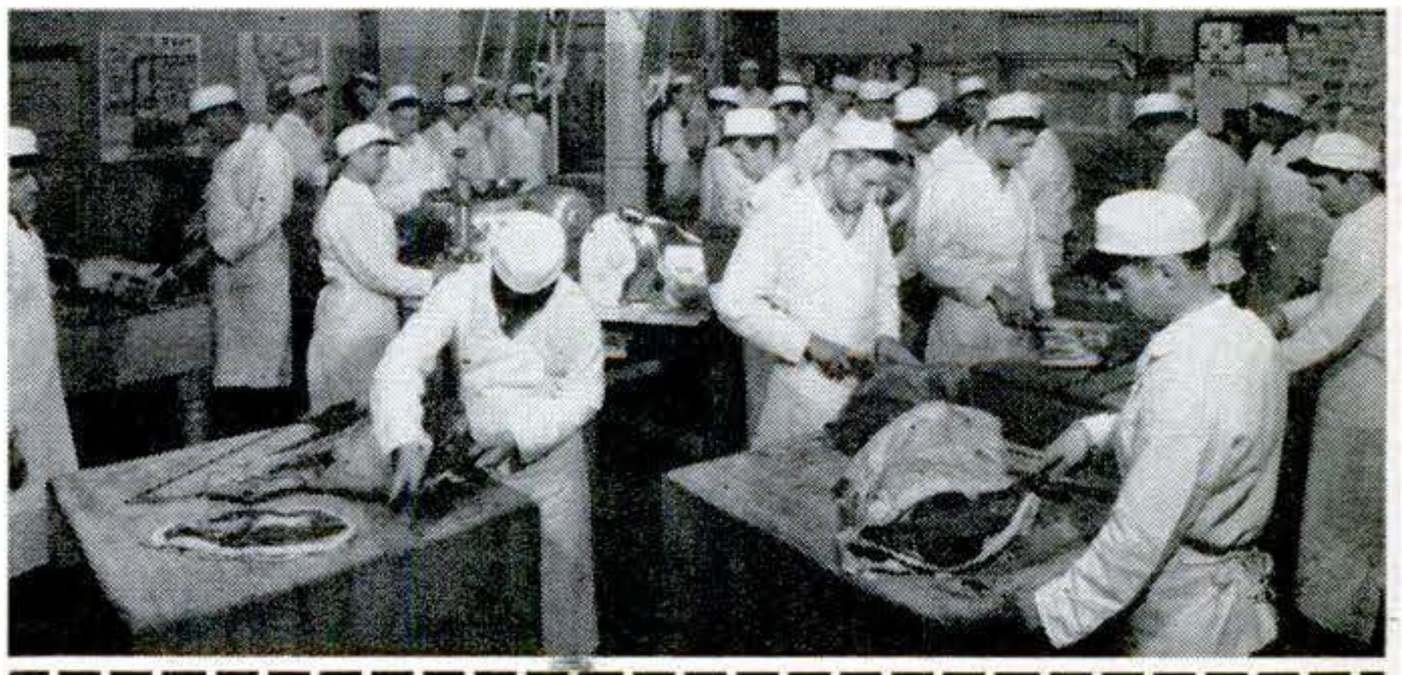
PAY AFTER GRADUATION

Come to National for complete 8 weeks course and pay your tuition in easy installments after you graduate. G. I. APPROVED. Diploma awarded. Free employment help. Thousands of successful graduates. OUR 28th YEAR!

FREE CATALOG—MAIL COUPON

Send now for big new illustrated National School catalog. See students in training. Read what graduates are doing and earning. See meat you cut and equipment you work with. No obligation. No salesman will call. Send coupon in envelope or paste on postal card. Get all the facts NOW!

NATIONAL SCHOOL OF MEAT CUTTING, INC.
Dept. 51-O Toledo 4, Ohio



NATIONAL SCHOOL OF MEAT CUTTING, INC., Dept. 51-O, Toledo 4, Ohio
Send me FREE 52-page school catalog on LEARN-BY-DOING training in PROFITABLE MEAT CUTTING, SUCCESSFUL MEAT MERCHANDISING and SELF-SERVICE MEATS at Toledo. No obligation. No salesman will call.
(Approved for Training Korean Veterans)

Name.....Age.....

Address.....

City.....Zone.....State.....

Copyrighted material

FREE!

Valuable U. S. Commemorative Set of

17 HISTORY IN THE MAKING STAMPS

SENT *FREE* TO SECURE NAMES FOR OUR MAILING LIST

Mail Coupon to Get These 4 Stamps

***plus* 13 OTHER GREAT U. S. STAMPS FREE!**

Mail coupon at once. We'll send you this fascinating set of 17 famous historic U. S. stamps NO COST TO YOU! Each stamp has exciting story behind it. Each stamp is worth REAL MONEY. All large stamps. But you must act fast. Supply limited. Don't ask for more than one set. We'll also include other interesting offers for your inspection.—PLUS a FREE copy of our helpful informative book, "How to Collect Stamps." This offer may have to be withdrawn soon—so rush coupon with 10c to help cover postage and handling to: **Littleton Stamp Co., Dept. 2-PS, Littleton, N. H.**

Littleton Stamp Co., Dept. 2-PS, Littleton, N. H.

Send—FREE—14 historic U. S. stamps and informative booklet, "How to Collect Stamps." I enclose 10c to help cover actual postage and handling costs.

Name.....

Address.....

City..... State.....

SHORTHAND IN 6 WEEKS AT HOME

WRITE 120 WORDS PER MINUTE

Age No Obstacle

Famous Speedwriting Shorthand. No symbols, no machines. Uses ABC's. Easiest to learn and use. Qualify at home in spare time. Fast preparation for a better position and a sound, substantial future. Nationally used in leading offices and Civil Service; also by executives, students, etc. 120 words per minute. 50% FASTER than Civil Service requirements. Over 150,000 taught by mail. Also typing.

"Tired of the routine of my clerical job, I decided that Speedwriting would help me obtain the better position I wanted. Within a few weeks of spare-time study, I mastered the ABC principles of Speedwriting. Now I can take dictation quickly, read it back smoothly and easily. I have been promoted to a fine position — W. E. Pearson, New Kensington, Pa.

The very low cost will surprise you

30th YEAR

Schools in over 300 cities in U. S., Canada, Cuba and Hawaii.

Write for FREE Booklet to:

Speedwriting®

Dept. 2602-3, 55 West 42 St., N. Y. 36

Embed Real Flowers In New MAGIC PLASTIC

Create lovely things like the pansy coaster shown—made by embedding **real pansies** in Castolite liquid casting plastic. Comes crystal clear or may be colored. Also make jewelry, book ends, candle holders, picture frames, figurines. Embed real flowers, butterflies, coins, photos, for plaques, paper weights, tiles, other objects. Use only home tools.

25¢

• New Book SHOWS HOW

Big, new book explains how to get started. Have fun—make extra money! Send 25c today for our "Castolite Creations" Manual and our proved "Home Success Plan."

The Castolite Co. Dept. B-2 Woodstock, Ill.

Genuine Dupont Plastic NEW FALSE PLATE

From Your Old, Loose Plate NO IMPRESSION NEEDED

New, revolutionary Duplication System actually transforms your old, loose, cracked, chipped plate into a new, natural-pink Dupont Plastic Plate with same teeth or new, natural matched teeth. ONE DAY SERVICE!

Only $18.95

30-DAY MONEY-BACK TRIAL

SEND NO MONEY—just your name and address for **FREE** details. *Save at our low price!* **Highest prices paid for Dental Gold. ALL-STATE DENTAL LABORATORIES, 22 W. Madison, Dept. 238, Chicago 2.**

Quick, EASY Way to REPRODUCE any Object

Make exact duplicates of trays, lamp bases, medals, figurines, vases, etc. right at home overnight! New RUBBER MOLD method needs no heat-curing. No special skill or tools required. Make perfect reproductions of objects of clay, plasteline, wood, metal, glass in any quantity! Cost will be only few cents. Send for Brochure 52 which gives exact step-by-step instructions anyone can understand and follow. Send 10c for it today to

SCULPTURE HOUSE, 304 West 42nd Street, New York 18, N. Y.

Make BIG MONEY!

RAISE CHIN-CHINS

PURE BRED, PEDIGREED, PROLIFIC

CASH MARKETS SUPPLIED for your Production. Pleasant—Easy—Full or Part Time.

Learn HOW these year-round money-makers can produce REAL PROFITS for you!

FREE illustrated Booklet — WRITE TODAY!

ROCK HILL RANCH, SELLERSVILLE 41, PA.

WORLD'S LARGEST BREEDER OF CHINCHILLA RABBITS

Bar Bells

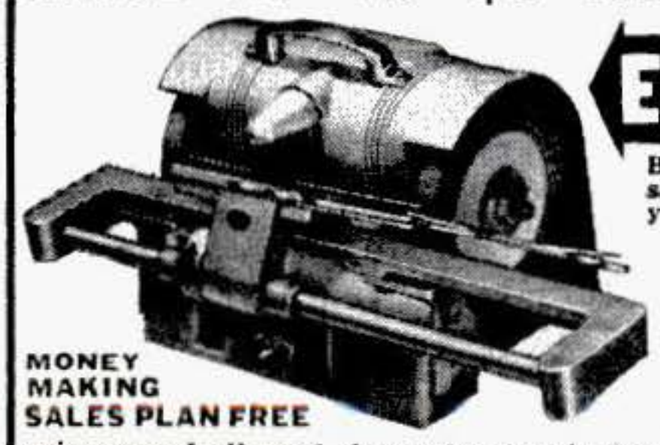
BUY DIRECT FROM FACTORY

Write for free booklet and price list

$8.95 up

INDEPENDENT IRON WORKS
2416 East 23rd Street, Dept. "C"
Los Angeles 58, Calif.

MAKE UP TO $5 AN HOUR WITH EASISHARP



MONEY MAKING SALES PLAN FREE

Big profits in your spare time sharpening scissors. We show you how to start making money immediately. This is your chance now to have your own business and a steady income. Sharpen a pair of scissors in less than two minutes! A child can operate it. Weighs only 10 lbs. Every home, barber, tailor, dressmaker—everybody uses scissors and all need sharpening two to four times a year. Don't let some one else beat you to this opportunity. Write immediately to

SERR-EDGE MACHINE CO., 9733 Lorain Ave., Cleveland, Ohio

EAR NOISES?

If you suffer from those miserable ear noises and are Hard-of-Hearing due to catarrh of the head, write us NOW for proof of the wonderful, palliative relief many people have reported after using our simple home treatment. NOTHING TO WEAR. Many past 70 reported such relief in hearing and ear noises. **SEND NOW FOR PROOF AND 30 DAYS TRIAL OFFER.**

THE ELMO COMPANY
DEPT. 3PS2, DAVENPORT, IOWA

Be a DETECTIVE

A CHALLENGE FROM WASHINGTON, D. C.
Help Stop Crime! Train at home. Earn big money. Amazing training course from the NATION'S CAPITOL (center of law enforcement) by former U. S. GOVT. AGENT and NAVAL INTELLIGENCE Officer exposes actual methods used by Criminals. Write for FREE BOOK. State age.

INTERNATIONAL DETECTIVE SYSTEM

INTERNATIONAL DETECTIVE TRAINING SCHOOL
1701 Monroe St., N. E. Dept. 532 Washington 18, D. C.

TASOPE PHOTO-ENGRAVING PLANTS

MATERIAL COST OF THIS CUT 3/4¢ SELLING PRICE $1.00 AND UP

Establish your own profitable PHOTO-ENGRAVING business. Make cuts for newspapers, printers, and advertisers. Make etched name plates, plaques etc. Instructions furnished, no experience necessary. Sold direct from factory since 1931. First five hundred cuts sold locally or by mail will pay for plant and pay you well for your time. Write for FREE catalog.

TASOPE DEPT. PS-2, AURORA, MO.

STUDY TO BE A DOCTOR
of Psychology or Metaphysics

Obtain a Ps.D., Ms.D., or Ph.D. degree. Be a Teacher, Lecturer or Accredited Practitioner. Teach others how to achieve Health, Happiness and Contentment. Chartered by State. Write for FREE book telling how.

THE NEOTARIAN COLLEGE OF PHILOSOPHY
Desk 5, Pickwick Building Kansas City 6, Missouri

POWER MOWERS & KITS

FREE PLANS

LOW FACTORY PRICES DIRECT TO YOU

Build your own quality mower with our LOW COST KITS. Parts. Engines. Free Plans guide you, 3 and 4 Wheel Kits, complete. Parts precision finished, ready to use. Write TODAY for Free Plans, Low Prices, Parts List and Guarantee.

3-WHEEL KIT NO. T-800

America's Finest Power Mowers completely assembled in 3 and 4 wheel models. Belt or direct drive. 18" and 20" sizes. Nationally known make engine. Latest improved features, sturdy construction and money back guarantee fully described in color folder. Write Today.

TRIANGLE MANUFACTURING CO., Box S-17, Fort Scott, Kansas

SPARE TIME!

Sensational New HOME-BUSINESS!

PRINT WITHOUT A PRINTING PRESS!

OR ANY SPECIAL EQUIPMENT

SCREEN PRINT TRADE MARK REG.

WHAT IS SCREEN PRINTING?
It's a revolutionary new method of printing – WITHOUT an expensive printing press. This amazing new development lets you print 25, 50, 100, 500, or even 1,000 copies in many cases, FOR *LESS THAN YOU CAN PRINT ON A $5,000 PRINTING PRESS.* Just put anything under a screen and take out beautiful products of printing—no expensive plates or "cuts" needed. No big overhead. Never has such an opportunity been offered the spare-time person who wants to make "Extra Income" in his home.

PRINT IN COLORS—EVEN NEW FLUORESCENTS
It's easy to print in luminescent, "glowing" fluorescent colors, too. Screen-Print lets you print on paper, cardboard, leather, glass, wood, plaster, fabrics—anything!

NO ART NECESSARY—EASY TO LEARN
Beautiful printing can be produced *WITHOUT* doing any art work.

A BUSINESS OF YOUR OWN
Be your own boss. Operate from the corner of your kitchen or garage. Build a successful future with a few cents worth of materials. Screen-Printing is the opportunity to establish a spare-time business without sacrificing job or pay check.

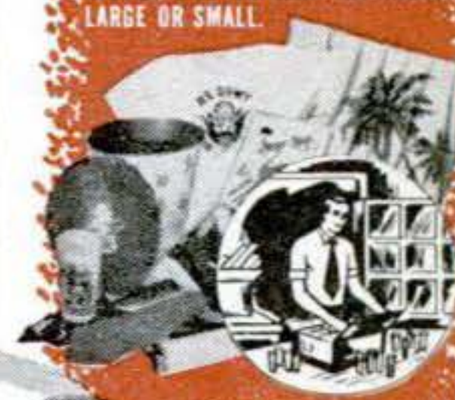
THERE'S $$$ IN ADVERTISING!
Here's your chance to GET INTO ADVERTISING—one of the largest paying businesses in America. Most Screen-Printing is used for advertising purposes. Materials cost you 10%—you can earn 90% – few businesses offer this high profit.

HUGE DEMAND! ENORMOUS PROFITS!
Millions of shops, stores, theaters, markets – almost any business needs Screen-Printing done for them. Make $10 to $20 profit on each dollar of cost on some jobs. Here's . . .
YOUR "Chance of a Lifetime" OPPORTUNITY to "cash-in" on this new printing method not generally known. We supply everything you need! A complete ready-made BUSINESS PLAN guides you every step of the way. This all can be yours—at our risk. Don't waste a minute – mail coupon NOW! TODAY! – and get all the FREE FACTS and ACTUAL SAMPLE

AMAZING NEW PRINTING SECRETS CAN BE YOURS
For Pleasure & Profit. Once you learn the closely guarded printing secrets of Screen-Print there's virtually no limit to how much "extra money" you can earn. SPARE-TIME WORK—FULL-TIME PROFITS.

PRINT ADVERTISING DISPLAYS FOR STORES, GAS STATIONS, THEATRES, MARKETS—EVERYWHERE!

PRINT SIGNS, BANNERS, POSTERS, LABELS, ETC. FOR EVERY BUSINESS, LARGE OR SMALL.



PRINT CLOTH, GLASSWARE, NOVELTIES, LAMPS, CALENDARS, DRAPERIES, PAPER, ETC.

FREE MY *BOOKLET* AND ACTUAL *SAMPLE* OF SCREEN-PRINTING. TELLS ALL THE FACTS ABOUT MY HOME-BUSINESS OPPORTUNITY PLAN.

FREE BOOKLET AND REAL SAMPLE
MAIL TODAY!

SCREEN-PRINT CO., Dept. 12
1010 So. Los Angeles Street Los Angeles 15, Calif.
Dear Mr. Nowak: Please rush me *booklet, facts, sample* and entire *Home-Business Plan*. All this is FREE. No salesman will call. I am under no obligation now or ever.

Name _____

Address _____

City _____ Zone ____ State _____

Copyrighted material

make it with $4..

worth of sand and cement

SELL IT FOR $90

manufacture much-wanted concrete outdoor fireplaces in your yard or basement-

exclusive franchise

$4 worth of sand & cement & only $12.50 worth of iron-work produced this beautiful fireplace! Maker sold it for $129.00!

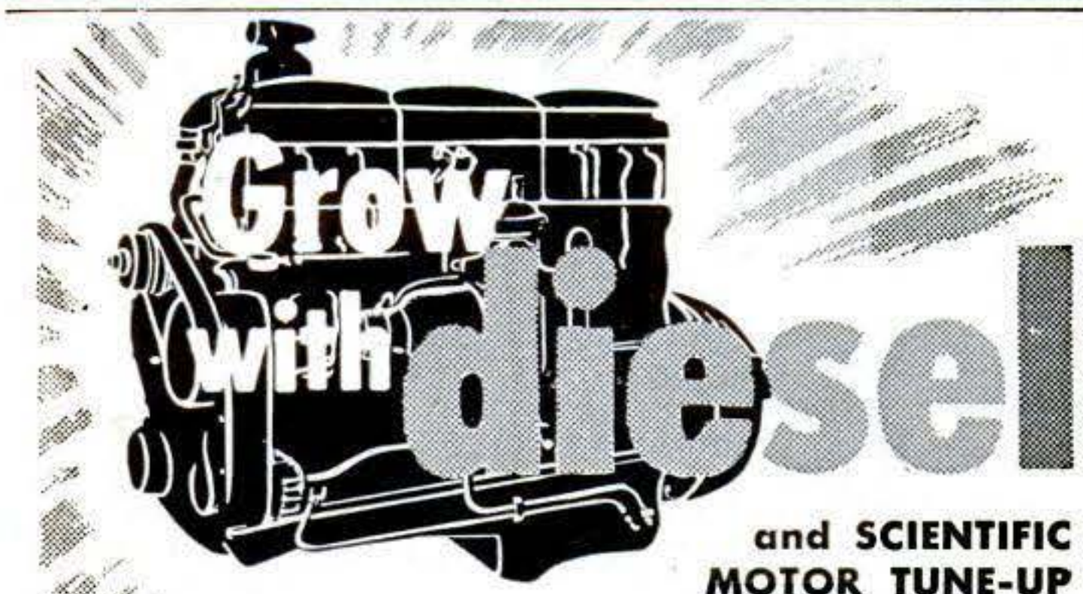
your own business at home
No experience needed. Exclusive Molds and Process available only to franchised dealers. We supply full instructions and equipment, 2 days free instruction. Your franchise fully protected. Two men can make 5 fireplaces daily. You can sell all you produce . . . for $90 to $180! We help you get started.

here are your customers!
Homeowners — for barbecues, picnics and parties; state parks, amusement parks, furniture stores, department stores, building contractors, remodelers. Your equipment makes 7 different styles, each beautiful and useful. Every sale is another recommendation. Mr. T., of Phila., reports selling 250 in his first 4 months. His customers included 3 leading department stores.

First 2 Sales Can Cover Your Down Payment!
. . . and we'll gladly arrange for convenient monthly payments for the balance.

ACT! Write Now For Details on Valuable Protected Franchise, Your Area. Reserve Your Territory Today!

GENERAL ENGINES CO.
Dept. SF-23, 307 Hunter Street, Gloucester, N. J.



and SCIENTIFIC MOTOR TUNE-UP —One of America's Fastest-Growing Big-Pay Industries!

Get ready now . . . Make a place for yourself in the mighty Diesel industry. Be there to take advantage of the opportunities ahead. The U.E.I. Plan for learning Diesel is simple, practical and is based upon the principle of learning-to-do-by-doing. Includes Auto Engine Tune-Up. You get fundamentals through spare-time home-study, followed by actual shop practice on modern Diesel engines. Experienced instructors guide you step-by-step — you learn the HOW and WHY of Diesel operation, service and maintenance. Get all the facts—mail the coupon and we'll send you a free copy of "Earning Power in Diesel." Mail coupon today!

UTILITIES ENGINEERING INSTITUTE
Dept. DM-19, *(Founded 1927)* Chicago 14, Ill.

UTILITIES ENGINEERING INSTITUTE, Dept. DM-19
2521 Sheffield Ave., Chicago 14, Illinois

Please send me, without obligation, your free book, "Earning Power in Diesel."

NAME (print).....AGE.....
ADDRESS .....
CITY..... Zone..... State.....
☐ Check here for information if you are under 17

EVERYTHING IN
LEATHERCRAFT

For Beginners - For Professionals
For Advanced Hobbyists

America's Most Complete Stock of Kits, Leathers, Tools, Supplies

It will pay you to get acquainted now with LARSON Leathercraft. Easy-to-Assemble kits for beginners require no tools or experience to make belts, billfolds, purses, gloves, woolskin animals, etc. Complete stock of moderate-priced tooling leathers, top-quality calfskins, tools, supplies for advanced hobbyists and leatherworkers. Send 10c TODAY for big illustrated catalog.

J. C. LARSON CO., 820 So. Tripp Ave.
Dept. 2126 CHICAGO 24, ILLINOIS

TREASURE -- $10,000

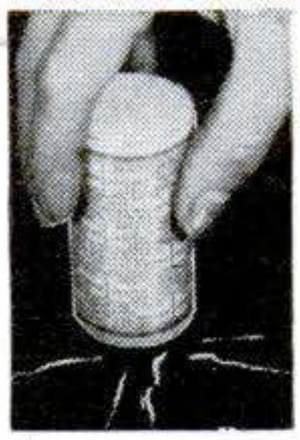
New locator detects metals, valuable minerals and buried treasure. Money-back guarantee of superiority.

Also geiger counters. Govt. reward of $10,000 for uranium discovery. Write for FREE information.

THE GOLDAK COMPANY
1544 W. GLENOAKS BLVD., GLENDALE 1, CALIF.

ILLUSTRATED COMIC BOOKLETS
THE KIND MEN LIKE!
THE GIRLS LIKE IT TOO!!
(VEST POCKET SIZE)
They are loaded with rare cartoons. Full of Fun and Humor. ***20 DIFFERENT*** booklets sent for $1 in sealed wrapper. No C.O.D.

BULCO, Dept. 493, Box 382-K., G.P.O., N.Y.C. 1



Amazing PROFESSIONAL "ALMOND STICK"

MAKES FURNITURE SCRATCHES DISAPPEAR—*In One Stroke!*

Banish scratches, faded spots on furniture. Just rub with MAGIC ALMOND STICK—and scratches vanish instantly! Restores beauty to light or dark wood finishes. Used by dealers, movers, etc. Send only $1.00. Full money-back guarantee.

MRS. DAMAR, 564 Damar Bldg., Newark 2, N. J.

RUPTURE!

An amazing Air-Cushion Invention allows body freedom at work or play. Light, neat, cool, sanitary. Durable, cheap. Day and night protection helps Nature support weakened muscles gently but surely. No risk. **Sent on Trial!** Write NOW for free Booklet and **Proof** of **Results.** All correspondence confidential.

Brooks Company, 374-A **State St., Marshall, Mich.**

BRAND NEW

33 MODELS
$14.95 up

BUSHNELL *Binoculars*

30 DAY FREE TRIAL

High Power BINOCULARS

Finest Precision Optics
Featherlight
Money Back Guarantee
Easy Pay Plan
Leather Case Incl'd.

Free! **Catalog & Book "How to Select Binoculars"**
Dealer Inquiries Invited

Bushnell Bldg., Dept. P62
Pasadena 1, Calif.

Copyrighted material

War Surplus SAVE UP TO 85%

ALTIMETERS Pioneer sensitive altimeters. Range 0-35,000 ft., calibrated in 20 ft. increments. Barometric pressure setting adjustment. No hook-up required . . . ready for installation in auto or aircraft.

Used, Good, **$12.95**

BLACK LIGHT KITS

FOR ULTRA-VIOLET FLUORESCENCE

NOW...you can build your own black light equipment at a new low cost with these easy-to-assemble components. Geologists, mineral prospectors and hobbyists can easily make laboratory black lights for mineral identification. Signs, posters, pictures, fabrics, house numbers . . . anything painted with fluorescent paint glows with eye-appealing fluorescence under black light. **KIT CONTAINS:** Ultra-Violet tube, brackets, ballast, starter, wire, plug, wiring diagram.

Special! 4 Watt Kit—(5¼" tube)... Postpaid ... $3.00
8 Watt Kit—(12" tube).... ... $4.00

All Equipment F.O.B. Pasadena • Enclose Full Amount with Order

C and H *Sales Company*

Box 356-FX East Pasadena Station • Pasadena 8, California

ORLON Work Uniforms

Coining Money for Salesmen!

The billion-dollar work uniform business is up for grabs! Miracle ORLON UNIFORMS make wool and cotton obsolete! Outwears wool 3-to-1; outwears cotton 5-to-1. What's more, ORLON is acid-proof, water-repellent, grease-resistant. Looks like wool, tailors like wool—but washes clean in soap and water. Drys out with original factory press! Everybody buys—service stations, garages, factories, etc. Huge demand and huge profits! Custom embroidery clinches sales. Write for *Free selling outfit*, actual samples.

TOPPS

Dept. 622, ROCHESTER, INDIANA

New **MIRACLE WALL CLEANER**

QUICK EASY

Saves Costly Redecorating

AMAZING INVENTION. Banishes old-style housecleaning mess and muss. No rags—no sticky "dough"—no red, swollen hands. No more dangerous stepladders. Literally erases dirt **like magic** from Wallpaper, Painted Walls, Ceilings, Window Shades. *Take orders from friends! Earn money!* Act now!

SAMPLES FOR TRIAL Sample offer sent immediately to all who send name at once. Hurry. Postcard will do. SEND NO MONEY—*just your name.* **KRISTEE CO., Dept. 714, AKRON 8, OHIO**

$199 STARTS YOUR OWN BUSINESS WITH A Jetspray VENETIAN BLIND LAUNDRY

1,000 LBS. FREE DETERGENT! !
MAKE UP TO $75.00 A DAY
In This New Fast Growing Industry

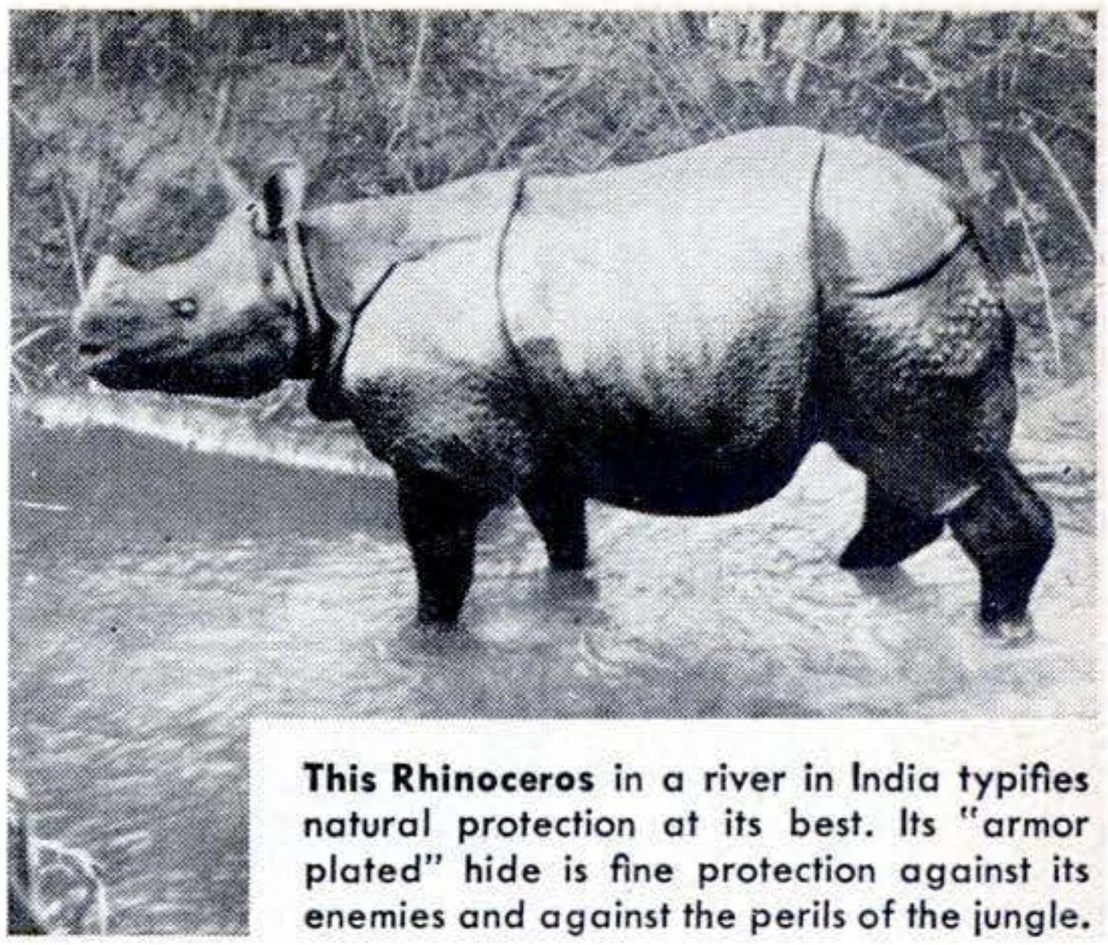
Use latest lowest priced professional unit engineered by inventor, world's largest manufacturer of venetian blind cleaning equipment. Beware of imitations.

JETSPRAY is incomparable—re-uses detergent. Cleans quickly without rubbing or taking blind apart. Homes, factories, etc., want this fast low cost service. Start in basement or garage—expand as business grows

BIG PROFITS - - - UNLIMITED OPPORTUNITIES
NO EXPERIENCE NECESSARY - - - WE SHOW YOU . . .
Write today—learn how you can be independent in your own business.

L. C. ROBINSON MFG. CO.

522 N. Rural St. Dept. P-2 Indianapolis 1, Indiana



This Rhinoceros in a river in India typifies natural protection at its best. Its "armor plated" hide is fine protection against its enemies and against the perils of the jungle.

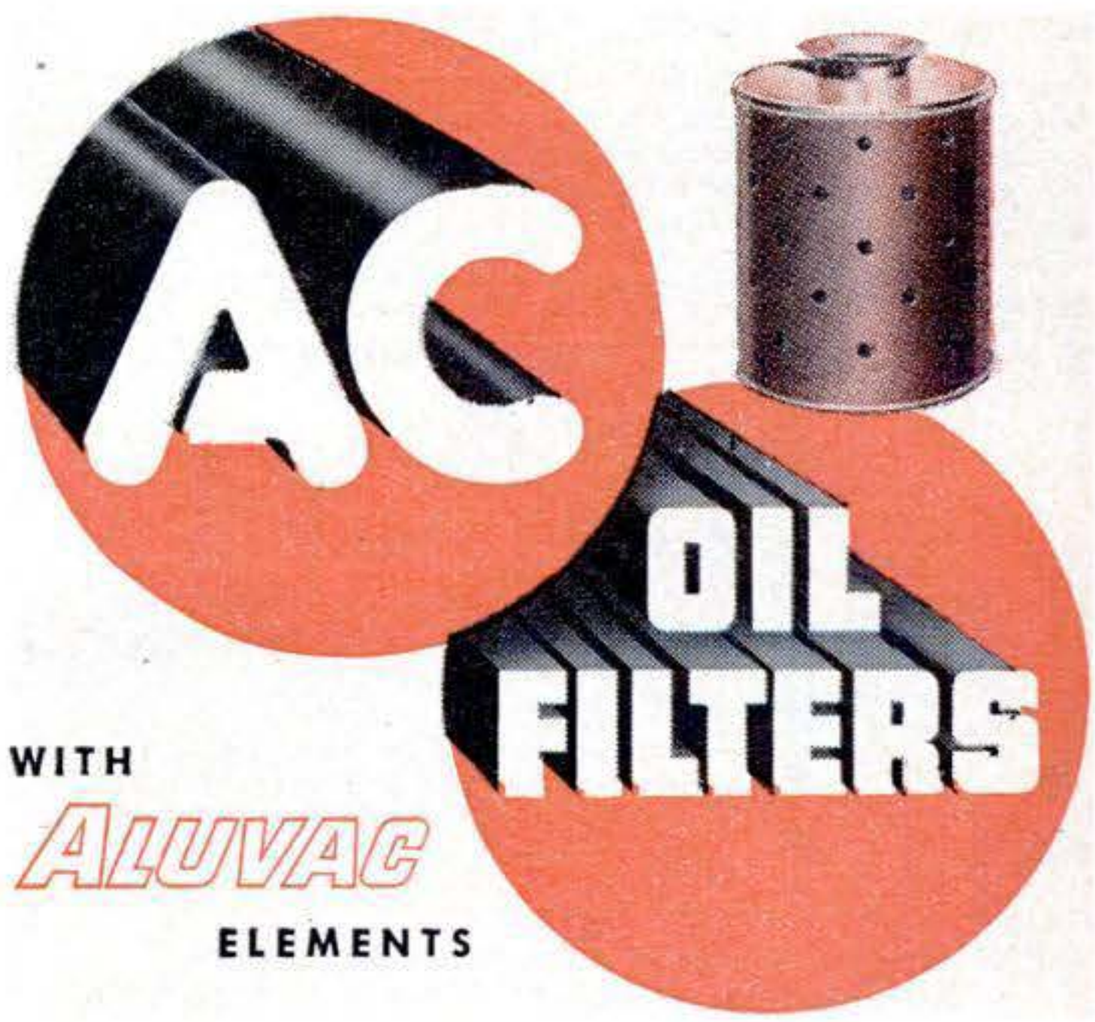
Positive Protection

An AC Oil Filter, with *Aluvac* element, provides the finest engine oil protection money can buy!

- **It has 10 times the filtering surface of ordinary elements**
- **It has double the sludge-retaining capacity**
- **It screens out particles as small as 1/100,000 of an inch.**

Clean lubricating oil from an *Aluvac* element protects against engine wear, conserves power, and insures smoother, long-life performance.

The next time you change your oil filter element, insist on getting the positive protection so many motorists enjoy—AC *Aluvac*.



Standard or optional factory equipment on Oldsmobile, Buick, Cadillac and Chevrolet cars—Chevrolet and GMC Trucks

AC SPARK PLUG DIVISION GM GENERAL MOTORS **GENERAL MOTORS CORPORATION**

Copyrighted material

Defense Plans Mean Bigger Pay for Good Machine Shop Men!

Now You Can Be a MASTER MACHINIST!

GET bigger pay in this ESSENTIAL field! Learn shop work quickly—with big home study and reference course, the **thoroughly revised** American Machinists' Library.

6 Volumes, 2987 Pages, 2900 Pictures

How to operate lathes, drills, other machine tools; turning, boring, grinding gear cutting, jigs and fixtures, drilling and surfacing, punches and dies, and MUCH MORE! Timely information on airplane assembly fixtures. Illustrations show every operation clearly. The facts are up to date. Brings you the extra "know-how" that means difference between "just another machinist" and a *Master* Machinist. Invaluable help for anyone—from apprentice to shop executives. Packed with short-cuts. Will help to put you in big-pay class and to rate as an ESSENTIAL worker. **Send no money.** Mail coupon for 10-DAY FREE TRIAL. Note special price, easy terms.

FREE 10-Days' Examination

McGraw-Hill Book Co., Dept. PS-2
327 West 41st St., New York 18, N. Y.

Send for 10 days' FREE trial, the American Machinists' Library. If not satisfied I will return books. Otherwise I will send $4.50, plus postage, then; and $7 a month for 4 months. (Reg. price $36; you save $3.50)

Name.....

Home Address..... PS-2

City & State.....

Employed by .....

☐ **WE'LL PAY POSTAGE** if you enclose $4.50 WITH coupon. Same return privilege. *(Offer Good in U.S. Only.)*

HANDIEST WORKSHOP TOOL

welds • cuts • solders • brazes
...even charges batteries

Turns your spare time to spare cash!

Make money for yourself while you save money for your neighbors. Fix their garden tools, children's toys, car bodies or fenders, build metal furniture and do 1001 other profitable jobs this easy, low cost way. The money you make soon pays for your "Lincwelder" . . . then helps buy other tools for your workshop.

ORDER YOUR WELDER NOW
Fill out and mail to
The Lincoln Electric Company
Dept. 201
Cleveland 17
Ohio

"LINCWELDER 60"

LINCOLN ARC WELDER

- Comes complete with full instructions.
- Approved by Underwriters Laboratories.
- Operates from 115 volt grounded circuit. (No. 12 wire fused for 20 amps.)

☐ Ship me the "Lincwelder 60" with accessories $48.00. (Including headshield, electrodes, carbons, electrode holder, ground clamp and cable.) ☐ Arc Torch $6.25 extra.
☐ Battery Charging Attachment $10.00 extra.
Enclosed is ☐ check ☐ money order.
☐ Send me free bulletin on the new "Lincwelder 60."

Name_____
Address_____
City_____ State_____ 201

WAR SURPLUS BARGAINS

$500,000.00 INVENTORY for QUICK LIQUIDATION

Surplus items—hundreds of them for home, shop, factory, farm and outdoor use. New items, used items, reconditioned items—all at tremendous savings—all priced for quick sale.

PAGE AFTER PAGE OF VALUES

This big catalog shows page after page of amazing money saving values. Write for your copy today. Send 10c to cover postage, mailing, etc. Write today!

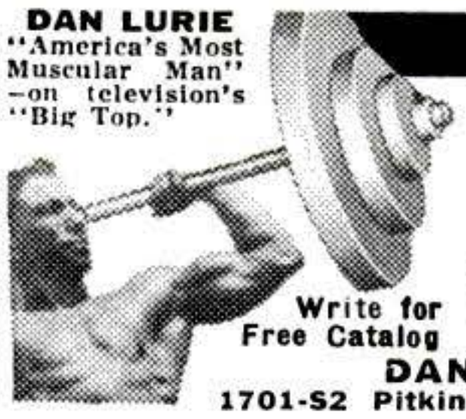
10c

SEND TODAY FOR YOUR COPY

STARK'S

509 So. State St.
Dept. PS-253
CHICAGO 5, ILL.

DAN LURIE "America's Most Muscular Man" —on television's "Big Top."



FAMOUS DAN LURIE

BARBELLS

with 4 courses—low factory prices

50 lb. set....$ 8.48	150 lb. set....$20.48
100 lb. set.... 13.98	200 lb. set.... 25.98

Write for Free Catalog

Order by Mail; 50% with order, bal, C.O.D. Extra wts. 13c per lb., F.O.B. plant

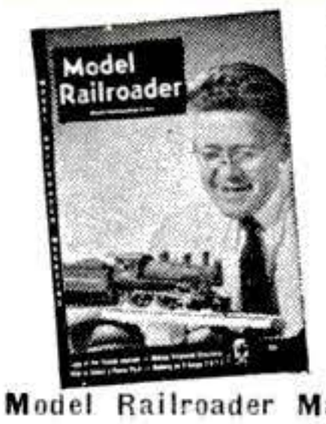
DAN LURIE BARBELL CO.
1701-S2 Pitkin Ave., Dept. 370-B, Brooklyn, N. Y.

Free Book on Arthritis And Rheumatism

HOW TO AVOID CRIPPLING DEFORMITIES

Explains why drugs and medicines give only temporary relief and fail to remove the causes; tells all about a specialized non-surgical, non-medical treatment which has proven successful for the past 33 years. Write for this 44-page FREE BOOK today.

Ball Clinic . Dept. 36 Excelsior Springs, Mo.



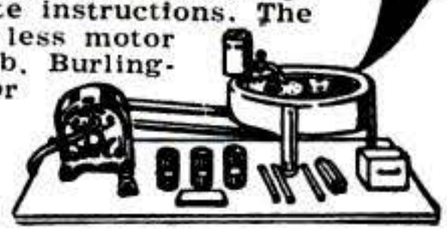
Model Railroading is Fun!

Read about it in picture-packed Model Railroader magazine. **Special Offer!** Send $1 ($1.75 value) for special 3-month subscription plus new 64-page "Introduction to Scale Model Railroading." Limited. Act today!

Model Railroader Magazine Dept. 1674 C. Milwaukee 3, Wis.

make your own Gems 29.50 F.O.B.

The Gem Maker comes complete with all necessary equipment, including a super-charged diamond blade for sawing, and all wheels for grinding, shaping and polishing; also complete instructions. The complete equipment as shown, less motor and belt, for only $29.50, f.o.b. Burlington, Wisconsin. Write today for information and literature.



B & I MANUFACTURING CO.
Dept. S Burlington, Wis.

Enjoy YOUR OWN *Lifetime* *INDEPENDENT BUSINESS*

Even If Now Employed

Here's a real money-making opportunity. Just take orders for exclusive top value shoe line chosen by millions. Sure fire repeaters. All sport, dress and work shoes. America's only cushioned Paratroop Boot. Shoes men go for. Big, BIG value! Magic Cushion. No investment or experience needed. Quick cash commissions up to $4.00 pair. Giant Bonus. Samples to Producers. Write NOW for FREE outfit without obligation.

PARAGON SHOE CO.
739 Columbus Ave., Boston 20, Mass.

Copyrighted material

MAKE EXTRA MONEY **PLASTICS** LEARN AT HOME

LEARN HOW TO MAKE fast-selling PLASTIC NOVELTIES FURNITURE JEWELRY SIGNS TOYS LAMPS

There are RICH OPPORTUNITIES for MEN and WOMEN with "know-how" in Plastics. Interstate's new Plastics course tells and shows how to make hundreds of fast selling items out of Plastics. Gives complete training in fabrication, casting, lamination, molding, internal carving, etc., in simple, easy, step-by-step language and pictures. Plastics and Fabricating Kits for 23 valuable Plastic items come with training at no extra cost. START A PLASTICS BUSINESS OF YOUR OWN. No other industry holds such promise for the future. You can make big money manufacturing novelties, toys, signs, etc., in your own home in spare or full time. Don't wait! Learn NOW how Interstate's Plastics Training qualifies you for success in the Plastics field.

WRITE TODAY!

PLASTICS AND SUPPLIES FURNISHED FOR 23 VALUABLE PROJECTS

INTERSTATE TRAINING SERVICE

Dept. C2B Portland 13, Oregon

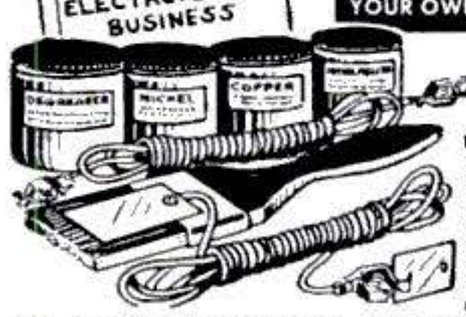
LEARN MODERN WATCH AND CLOCK REPAIRING

Complete Course—Only $5.95

At home, spare time. Good field now . . . security and contentment in future. Start part-time business and **EARN while you learn.** Horology is precision instrument work...a great and growing field, sensational opportunities. Easy self-instruction course. Full price, only $5.95. SEND NO MONEY. Just pay postman, plus C.O.D. postage. Or send $5.95 with order, we'll ship postpaid. Satisfaction guaranteed or refund. **NELSON-HALL CO., 210 S. Clinton St., Dept. 3-BX-1, Chicago 6, Ill.**

NO TANKS USED
NEW SIMPLIFIED METHOD

SUCCESS IN THE ELECTROPLATING BUSINESS



ELECTROPLATE

ANY OBJECT IN HOME, SHOP, GARAGE OR START YOUR OWN WELL PAYING ELECTROPLATING BUSINESS.

TOOLS, SILVERWARE, HOUSEHOLD ARTICLES, JEWELRY, BABY SHOES, AUTO PARTS & 1001 ARTICLES

NOW, using **NEW** plating kit, it's easy to electroplate any object. Complete kit and instructions on plating metal and non-metal objects, with nickel, copper, silver, gold, etc., plus full data on obtaining all the business you desire and make **BIG MONEY** full or spare time. **ONLY** $4.95. **SEND NO MONEY**—everything sent **COD** plus postage—OR send $4.95 now and receive it postpaid. Money back in 7 days if not satisfied.

M. Z. NATIONAL SALES CO., 113-G West 42 St., N. Y. 18, N. Y.

ITALIAN ACCORDIONS

All types, all models, Very best. Hand Made. Fully guaranteed. Buy direct from Factory representative at lowest wholesale prices, and Save Money. Also Button Accordions, Chromatic Accordions and Concertinas. We take any instruments in trade. Send name and Address for FREE catalog.

ITALIAN ACCORDION MFG. CO.

7600 Cottage Grove Ave., Dept. PS-2, Chicago 19

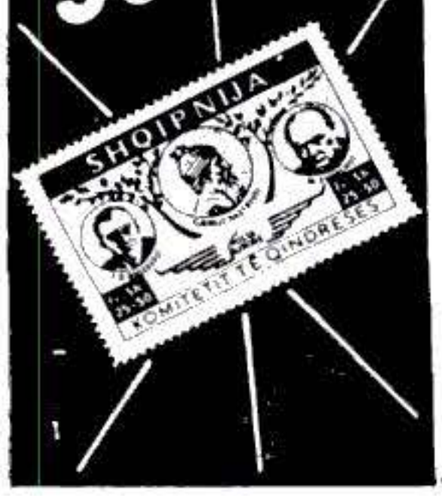
RAISE GIANT FROGS Big Demand

Nufond Giant

Millions used yearly! Frogs sell $5 dozen. Breeder lays up to 20,000 eggs yearly. **Season just starting!** Men & Women get ready now for this year's eggs. Small pond starts you. New book tells how! Send for illustrated **FREE** folder today. Write to

MARLBORO HOUSE-11
1035 Marlborough, Detroit 15, Mich.

508 DIFFERENT STAMPS 25¢



WHAT A BUY!

YOU receive the complete airmail set of 4 beautiful bicolored stamps from Albania depicting Roosevelt and Churchill plus the new country of South Molucca's issues of the United Nations; Universal Postal Union! MacArthur and map; Indonesia beauty plus hundreds and hundreds of unusual stamps from the four corners of the world. All in all you get 508 DIFFERENT STAMPS for only 25c to introduce our bargain approvals.

BONUS! POCKET STAMP DICTIONARY AND GUIDE!

STAMPEX CO. 116-AP NASSAU ST. NEW YORK, N. Y.

$95 AN HOUR

"Every hour I spent on my I.C.S. course has been worth $95 to me! My position, my $7000 a year income, my home, my family's happiness—I owe it all to spare-time training with International Correspondence Schools!"

Every mail brings letters from some of the 5,918,632 I.C.S. students telling of promotions and pay raises—rewards of spare-time study.

What are *you* doing with the hours after supper? Can you afford to let them slip by unimproved when you can easily make them mean so much? One hour a day spent with I.C.S. will prepare you for the position you want in the work you like best.

For 61 years, men in offices, stores, shops, factories, mines, railroads—in every line of technical and commercial work—have been winning promotion and more pay through I.C.S.

When one hour a day spent with I.C.S. can bring you a bigger income, more comforts, more pleasures, all that success means—can you let another spare-time hour go to waste? Without cost, without obligating yourself in any way, put it up to *us* to prove how we can help you. Just mark and mail the coupon.

FREE BOOKS Catalog on subject you check in coupon plus 36-page book, "How to Succeed."

INTERNATIONAL CORRESPONDENCE SCHOOLS
Box 7631-N, Scranton 9, Pa.

Without cost, send me free book, "HOW TO SUCCEED" and free catalog on course checked.

- ☐ Accounting
- ☐ Aeronautical Engineering Jr.
- ☐ Aircraft Drafting
- ☐ Architecture
- ☐ Architectural Drawing
- ☐ Automobile Mechanic
- ☐ Auto-Elec. Technician
- ☐ Bookkeeping
- ☐ Building Contractor
- ☐ Business Administration
- ☐ Certified Public Accounting
- ☐ Chemical Engineering
- ☐ Civil Engineering
- ☐ Cotton Manufacturing
- ☐ Diesel Engines
- ☐ Diesel Locomotive
- ☐ Drafting
- ☐ Electrical Engineering
- ☐ Electrical Maintenance
- ☐ Electronics
- ☐ Foremanship
- ☐ Television
- ☐ General Radio
- ☐ High School
- ☐ Highway Engineering
- ☐ Hydro-Electric Power Plant
- ☐ Industrial Engineering
- ☐ Industrial Instruments
- ☐ Industrial Supervision
- ☐ Machine Shop Practice
- ☐ Mathematics
- ☐ Mechanical Engineering
- ☐ Mechanical Drafting
- ☐ Practical Accounting
- ☐ Practical Electrician
- ☐ Reading Shop Blueprints
- ☐ Reading Structural Blueprints
- ☐ Radio Servicing
- ☐ Railroad
- ☐ Railway Postal Service
- ☐ Salesmanship
- ☐ Stenographic-Secretarial
- ☐ Structural Engineering
- ☐ Textiles
- ☐ Toolmaking
- ☐ Tool Design
- ☐ Traffic Management

Other _____

Name _____ Age _____

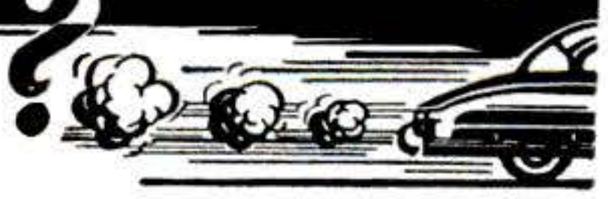
Home Address _____

City _____ State _____

Occupation _____

Special tuition rates to members of Armed Forces. Canadian residents address International Correspondence Schools Canadian, Montreal.

WANT QUICK STARTS ?



. . . ON COLD MORNINGS?

USE A SPARK ITENSIFIER

GET FULL COMBUSTION, SPEED & POWER FROM ANY CAR!

***Pays for itself* in gas, oil and battery savings.**

The amazing Spark Intensifier works on the accepted fact that a good, *strong ignition* spark ignites fuel quicker and more completely. *It makes a powerhouse out of your coil.* This is the original Spark Intensifier that has been used successfully by thousands of motorists and leading race drivers. The GIANT SPARK it produces gives *quicker starting . . . improves combustion . . . reduces misfiring . . . prevents ring and cylinder wear.* A built-in point protector protects your spark plugs and ignition points. It will last the lifetime of your car and cannot harm it in any way.

Easily installed in the center hole of the distributor cap of any car, truck or tractor, the Spark Intensifier helps the ignition coil build a higher voltage and allows a wider spark gap. Thus the increased power at the plugs ignites your fuel with a MIGHTY SPARK instead of a weak flicker.

Install your Spark Intensifier and check your results with the following comments of a few of the thousands of satisfied users: "I realized greater power . . . got top speed and motor efficiency."—"I got a 'hotter' spark with a wider spark gap."—"Found that I had better combustion and less oil dilution with your amazing product."

***You take no risk.* WE GUARANTEE IMPROVEMENT OR YOUR MONEY BACK! Only ..... $2.00 postpaid**

CONSOLIDATED ENGINEERS, Dept. SA-2
10411 W. Washington Blvd.
Culver City, Calif.

Last Week I Made $259.92

RAY BARTA

with Science's New Midget Miracle, PRESTO Fire Extinguisher

So reports RAY BARTA of Wisconsin. Many others "cleaning up"—so can YOU!

AMAZING **new kind** of fire extinguisher. Tiny "Presto" (about size of a flashlight!) does job of bulky extinguishers that cost 4 times as much, are 8 times as heavy. Ends fires fast as 2 seconds. Fits in palm of hand. Never corrodes. **Guaranteed for 20 years!** Sells for only $3.98!

Show it to civil defense workers, owners of homes, cars, boats, farms, etc., and to stores for re-sale—make good income. H. J. Kerr reports $20 a day. C. Kama, $1,000 a month. Write for FREE Sales Kit. No obligation. MERLITE INDUSTRIES, Inc., Dept. 112, 201 East 16th St., New York 3, N. Y. *IN CANADA: Mopa Co., Ltd., 371 Dowd St., Montreal 1, P.Q.* **(If you want a regular Presto to use as a demonstrator, send $2.50. Money back if you wish.)**

Science's New Midget Miracle "PRESTO"

ELECTRIFY your SEWING MACHINE

NEW LOW PRICE! $10.50 1 YEAR GUARANTEE

Buy direct from manufacturer and save! Kit comes fully wired, installed in a jiffy. Fits all machines! You get **ALL-NEW PARTS**

- **Motor & Bracket**
- **AC-DC 115v 60c**
- **Multi-speed foot control**
- **Cord set & block**
- **Easy instructions**
- **Steel pulley & belt**

FREE . . . reg. $2.95 chrome SEWLITE given with every kit.

10 DAY FREE TRIAL—ORDER NOW!

Send no money, pay COD or send money order and we'll pay postage. Please state whether wheel on your machine turns toward you or away from you. Shipping wt. 6 lbs.

SENIOR SEWING MACHINE CO.
Box 54 Dept. PS-45 Brooklyn 10, N. Y.

Become a MENTAL SUPERMAN OVERNIGHT!

Floor everybody! No studying! Revolutionary **MEMO-PROP** does all your thinking! It's uncanny! Unprecedented! FULL MONEY-BACK GUARANTEE! For FREE LITERATURE write: **BIJOU HOLLYWOOD STUDIO, BOX 1727-V3, HOLLYWOOD 28, CALIF.**

BATTERIES START A FACTORY AT HOME

—and re-cast junk batteries into new, with and without new materials; the latest achievement. We supply complete instructions and everything **needed. Large daily profits.**

BATTERY LABORATORY SCHOOL
DEPT. PSM, MINNEAPOLIS 4, MINNESOTA

CIGARS FACTORY FRESH Mild and Flavorful

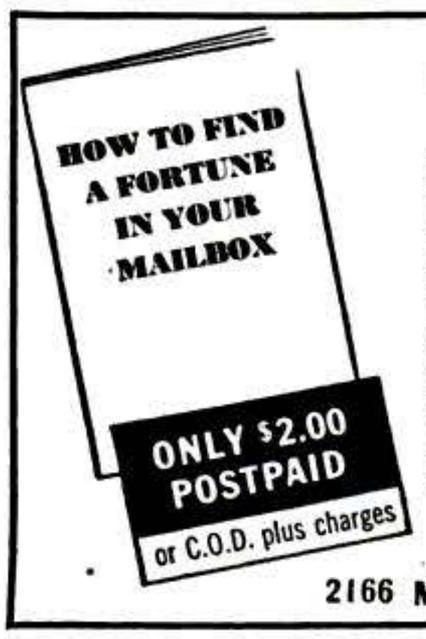
Choice tobacco. Fine smoking. Low cost. 10c size. Box of 50 $3.00. Two boxes $5.50. Postpaid. Get **fresh cigars** and save money. Send check or currency today. Money back guarantee. You will like them. Or try four—send quarter.

ESQUIRE CIGAR FACTORY
5514N EASTON AVE. ST. LOUIS 12, MO.

MEN PAST 40

Men afflicted with Bladder Trouble, Getting Up Nights, Pains in Back, Hips, Legs, Nervousness, Dizziness, Physical Inability and General Impotency send for our amazing **FREE BOOK** that tells how you may correct these conditions and have new health and Zest in Life. Write today. No Obligation.

Excelsior Institute, Dept. B-5, Excelsior Springs, Mo.



A FORTUNE FOR YOU

Right in Your Own Home

Now you can find new Happiness, Security and Independence in your own money-making business.

Thousands of men and women are making BIG money in the Mail Order Business, operating right from their own living rooms . . . and YOU CAN TOO! Start Today! Order your copy of the amazing new book, "How to Find a Fortune in Your Mailbox." Learn how, for only a few dollars, you can start building a prosperous new business and a lifetime of happiness for you and your family.

Satisfaction Guaranteed

PROFITS UNLIMITED
2166 Market St., Dept. 2S, San Francisco, Cal.

Copyrighted material

SENSATIONAL

OPTICAL BARGAINS

IMPORTED 20X TELESCOPE AND TRIPOD

Machined threaded fittings throughout. Weighs 7 ounces. 6¾" closed length. 13½" open length. Achromatic objective lens low reflection coated on inside. Makes excellent spotting scope. Swivel-head tripod is collapsible. 9" high.

Stock #50,007-N (with Tripod)...**$12.95 Pstpd.**
Stock #50,006-N (without Tripod) **$ 8.95 Pstpd.**

SLIDE PROJECTOR SETS Consists of all unmounted lenses you need to make the following size projectors:

Stock #4029-N—35 mm. .....**$2.85 Postpaid**
Stock #4038-N—2¼"x2¼" .....**$3.35 Postpaid**

SIMPLE LENS KITS—Include plainly written, illustrated booklet showing how you can build lots of optical items. Use these lenses in photography and for dozens of other uses in experimental optics, building TELESCOPES, low power Microscopes, etc.

Stock #2-N—10 lenses.....**$ 1.00 postpaid**
Stock #5-N—45 lenses.....**5.00 postpaid**
Stock #10-N—80 lenses.....**10.00 postpaid**

Order By Stock No. Send check or M.O.

We Have Literally Millions of War Surplus Lenses and Prisms for Sale at Bargain Prices. Also numerous Types of Instruments including low price, imported microscopes. Write for FREE CATALOG-N.

EDMUND SCIENTIFIC CORP., Barrington, N. J.

OIL FROM THE PUBLIC LANDS

Get the amazing story of how U. S. citizens can file for oil rights on public land in the West. Profits made as high as $250,000 for $250; $11,000 monthly for $200. We select lands in possible oil areas, show you how to file. Send for free booklet.

CALIFORNIA LEASE CO.

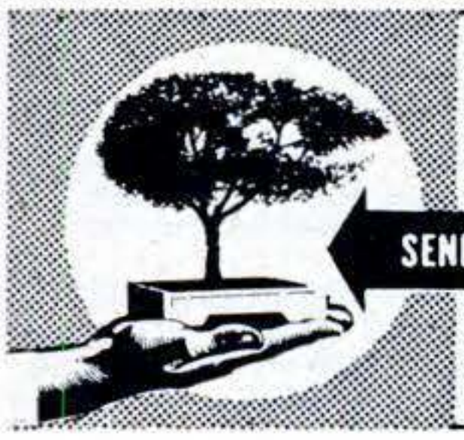
7075-PS Hollywood Blvd., Los Angeles 28, Calif.

PROFITS MAKE YOUR OWN RUBBER MOLDS

WRITE TODAY FOR NEW FREE CATALOG
Learn to cast thousands of perfect figurines, plaques, book ends, ash trays, etc. Start TODAY!

NO EXPERIENCE GREAT PROFITS
X. L. Rubber Pts. **$2.50** Qts. **$4.00** (postage extra) Models and enough for 3 molds **$1.50** prepaid.

PLASTIC ARTS STUDIO
3403 S. MADISON ST. DEPT. 3, MUNCIE, INDIANA



GROW MINIATURE TREES

Grow authentic, LIVE dwarf trees!
Fascinating hobby! Fabulous profit!

SEND FOR FREE SEED & INSTRUCTIONS!

MINIATURE NURSERY CLUB
Dept 4-F.P.O. Box 18696, Rimpau Sta.
Los Angeles 19, California

PILES

If you suffer the miseries of itching, bleeding or protruding piles, you may have a generous supply of Page's Palliative Pile Preparation *absolutely free* for the asking. These preparations have relieved pile suffering in hundreds and thousands of cases for over 60 years.

FREE Trial supply to quickly prove all this, will be sent absolutely free with no obligation to buy now or later. Send your name and address for your free trial TODAY!

E. R. PAGE CO., Dept. 45K2, Marshall, Mich.

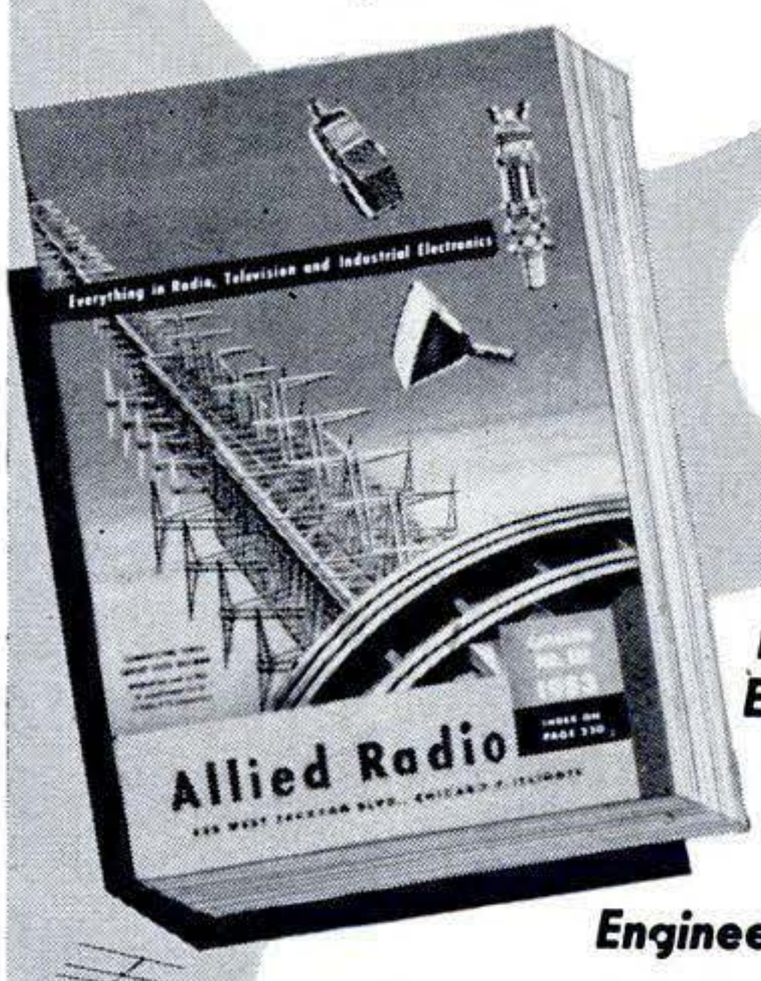
World's Most Complete!

1953 ALLIED

TV & RADIO CATALOG

FREE!

Everything in TV & Radio At Lowest Prices



236 PAGES VALUE-PACKED

Everything for Experimenters, Builders, Amateurs, Servicemen, Engineers, Soundmen

Send for ALLIED's big 236-page value-packed guide to *everything* in TV and Radio! Custom TV chassis, TV accessories, FM and AM radios, Amateur supplies, High-Fidelity Sound, P. A. Systems, recorders, test instruments, builders' kits—plus the world's largest stocks of electronic parts, tubes, tools and books. Get more for your money—send today for your FREE 1953 ALLIED Electronics Catalog!

SEND FOR FREE CATALOG

ALLIED RADIO

ALLIED RADIO CORP., Dept. 7-B-3
833 W. Jackson Blvd., Chicago 7, Illinois

☐ Rush FREE 1953 ALLIED 236-Page Catalog.

*Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

Copyrighted material

The Famous STANLEY STEAMER

1909 STANLEY STEAMER
Kit with instructions $2.95
Length 8"

Want Fun?
Then Start This New Hobby!

A fascinating hobby that is sweeping the country. Fun for the entire family! Build these simple and easy prefabricated kits.

FREE! Restored, full size, antique MODEL "T" FORD, ready to drive home—FIRST PRIZE in our gigantic model building contest—many other valuable prizes. ENTER TODAY! Inquire at your Hobby, Toy or Department Store, or write to us for information.

OLD TIMERS complete list of Authentic Auto Kits

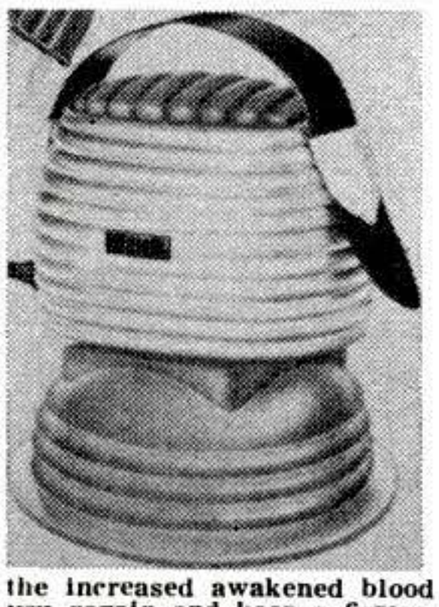
YEAR	MAKE	LENGTH	PRICE
1904	Oldsmobile	6"	$1.95
1911	Maxwell	7½"	2.50
1903	Model "A" Ford	8"	2.50
1900	Packard	6¾"	2.50
1911	Buick "Bug"	7½"	2.50
1903	Rambler	6½"	2.50
1903	Cadillac	7"	2.50
1910	Model "T" Ford	8"	2.50
1902	Franklin	7"	2.50
1906	Columbia Electric	6½"	2.50
1909	Stanley Steamer	8"	2.50
1910	International Harvester	8½"	2.95
1909	Model "T" Ford	8"	2.95
1911	Brush Delivery	7⅝"	2.95
1914	Stutz Bearcat	10½"	2.95
1913	Mercer Raceabout	9¼"	3.95
1906	"Old 16" Locomobile	10"	3.95
1914	Regal Underslung	9"	3.95

SOLD AT HOBBY, TOY AND DEPARTMENT STORES, OR WRITE TO US. ADD 25c FOR POSTAGE AND HANDLING.

OLD TIMERS
SCRANTON HOBBY CENTER
Dept. B28, 315 Adams Ave.
SCRANTON 10, PA.

REDUCE

KEEP SLIM AT HOME WITH RELAXING, SOOTHING MASSAGE!



For Greatest Benefit in Reducing by Massage Use

SPOT REDUCER

with electricity. Also used as an aid in the relief of pains for which massage is indicated.

This remarkable new invention uses one of the most effective reducing methods employed by masseurs and turkish baths—MASSAGE.

With the SPOT REDUCER you can now enjoy the benefits of RELAXING, SOOTHING massage in the privacy of your own home! Simple to use—just plug in, grasp handle and apply over most any part of the body—stomach, hips, chest, neck, thighs, arms, etc. The relaxing soothing massage breaks down FATTY TISSUES, tones the muscles and flesh, and the increased awakened blood circulation helps carry away waste fat—helps you regain and keep a firmer and more graceful figure. **When you use the Spot Reducer, it's almost like having your own private masseur at home. It's fun reducing this way!** The SPOT REDUCER is handsomely made of light weight aluminum and rubber and truly a beautiful invention you will be thankful you own. AC 110 volts.

Try the Spot Reducer 10 Days Trial in Your Own Home

Mail this coupon with only $1.00 for your SPOT REDUCER on approval. Pay postman $8.95 plus delivery—or send $9.95 (full price) and we ship postage prepaid. Use it for ten days in your own home. Then if not delighted return SPOT REDUCER for full purchase price refund.

SPOT REDUCER CO., Dept. B-387
318 Market St., Newark, New Jersey

Please send me the SPOT REDUCER for 10 days trial period. I enclose $1, upon arrival I will pay postman only $8.95 plus postage and handling. If not delighted I may return SPOT REDUCER within 10 days for prompt refund of full purchase price.

☐ I enclose $12.98. Send Deluxe Model.

Name.....

Address.....

City.....State.....

☐ **SAVE POSTAGE**—check here if you enclose $9.95 with coupon. We pay all postage and handling charges. Same money back guarantee applies.

PARTS FOR MILITARY TRUCKS

JEEP TOPS and CURTAINS

All Brand New . . . Not Surplus

Made of Heavy Canvas Duck . . . Waterproof
MILITARY TYPE models, Top and Curtains, complete less bows..... **$59.50**

TOP and CURTAINS, HALF CAB MODELS . . . CJ2A and CJ3A, complete with hardware, less bows..... **$65.00**

TOP and CURTAINS, models CJ2A and CJ3A, complete with hardware, less bows..... **$88.80**

When ordering please state exact model.
All prices FOB, K. C., 25% dep. on CODs.

FOR JEEP, DODGE, CHEV., GMC, STUDEBAKER, 4 WHEEL DRIVE AND 6 WHEEL DRIVE. ALSO PARTS CATALOG. WRITE

JEEP MOTORS

UNITED AUTO PARTS CO. INC
1901 TROOST·GR.1800·KANSAS CITY, MO.

AMAZING NEW POCKET SIZE RADIO

NO TUBES, BATTERIES OR ELECTRIC "PLUG-INS" NEEDED. "TUNES IN" MOST LOCAL RADIO STATIONS with **STATIC-FREE CLEAR TONE.** Has new perma-crystal diode and **TINY SELF-CONTAINED SPEAKER PHONE**—A marvelous real tiny pocket size radio to take with you anywhere you go—**FOR REAL FUN AND ENJOYMENT. GUARANTEED TO WORK** and should last for years! **SEND $1.00** (cash, mo, ck) and pay postman $3.99 C.O.D. postage or send $4.99 for p.p. delivery. **COMPLETE** ready to play. By mail only from:

MIDWAY COMPANY
DEPT. PPS-2 KEARNEY, NEBRASKA

MONEY in HAMSTERS

The new wonder animals from Syria. Often called Toy Bears. Delightful pets. Everyone desires them. Wanted by laboratories and pet shops. Clean, odorless. Raise anywhere. A profitable hobby or business. Write today for free book of details.

GULF HAMSTERY
14 Fir St. Gulf Shores, Ala.

Find HIDDEN TREASURES

GEIGER COUNTERS (as shown) for Uranium Detection. **TREASURE DETECTORS** for gold, silver, etc. Lightweight, ultra sensitive. Best at any price. Also mineralights.

• **INFORMATION FREE** •

Detectron CO.
5631 Cahuenga, No. Hollywood, Calif.

Broken or Loose FALSE PLATE?

Make Plates Like New

Fix it Yourself EASILY in a Few Minutes

Your plates may become broken or loose just when you need them most. With FIX-IT-KIT you can repair your own broken plates. Also tightens loose fitting plates, easily. Get permanent comfort with professional material. Complete instructions. Satisfaction guaranteed or your money refunded. *Order Now* at a new low price only **$2.98** postpaid — or sent C.O.D.

DENT FIX DENTAL PRODUCTS Dept. PS-2
P.O. Box 674 Kansas City 8, Missouri

French STYLE DUELING SWORDS

SET OF TWO **$3.98** post paid

Once used in deadly combat—now an exciting sport! Learn right at home. Fun—safe* —educational. These swords are made of fine blue spring steel, polished metal guards, turned handles, rubber safety tips. Fencing teaches quick thinking, develops coordination, posture. Since the Middle Ages, Europeans have enjoyed the sport of dueling. *Now advocated by U.S. colleges. Set includes two swords and the booklet, "The Art of Fencing". Special price. **MONEY BACK IF NOT COMPLETELY SATISFIED**

At sporting goods dealers or send $3.98 to
TECHRITE CORP., Box 12 T South Pasadena, Calif

Copyrighted material

From ONE SOURCE- the Ready-Made MATERIALS, the TESTED PLANS and the GUARANTEED BACKING to give YOU-

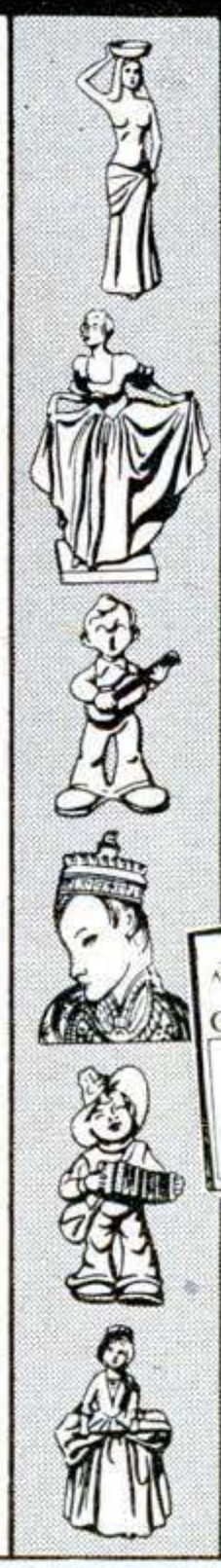
ONE THOUSAND GOLDEN OPPORTUNITIES

A GRAND OPPORTUNITY!
We offer men and women everywhere what we believe, and thousands of sincere and enthusiastic customers have verified, is the greatest and most generous proposition ever made to ambitious people in the U.S.A.! It's like receiving an inheritance or being remembered in your rich Uncle's will! What we have to offer is worth a fortune to any person with a little vision, a little ambition and an earnest desire to establish themselves in a wonderfully fascinating and profitable business of their own!

MAKE BEAUTIFUL THINGS BY CASTING!
1. Our **Catalog 19** is also an instruction book for it illustrates and describes hundreds of wonderful things you can make **WITHOUT TOOLS OR MACHINERY** right at home! The **PLASTICAST PROCESS OF CASTING** is *as easy as pouring water out of a glass!* We show you how to make the most beautiful imbedded jewelry you have ever een . . . *there is nothing else like it!* Also desk pensets, paper-weights, fishing lures, pistol grips, lamps, keychains, enchanted gardens, imbedded photos, souvenirs, ash trays, book ends, novelties, curios and many other unique items too numerous to mention! We show you how to permanently preserve flowers, butterflies, insects, photos, items for display and curios in crystal clear transparent plastic!

MAKE PRECIOUS GEMS!
2. We show you how to make precious-like artificial gems of such exquisite beauty *you will hardly believe your eyes!* Devoting your time to this one item alone could make you wealthy . . . yet we have dozens more! Liquid Marble, Liquid Ivory, Porcelain, etc.

UNBREAKABLE CERAMICS!
3. We teach you how to make an endless variety of attractive, useful things out of CERAMIC! We have one of the largest **ORIGINAL** selections of molds in the country! Figurines, statues, planters, mugs, ashtrays, salt & peppers, novelties, etc. We have a special **UNBREAKABLE CLAY** *that can be hardened in your kitchen oven!*



GADGETS, MODELS, INVENTIONS!
4. We show you how to make gadgets and models and how to develop your own pet ideas and inventions . . . how to bring your ideas out to market in any quantity, and all it costs to get started is less than the price of a pair of shoes!

WE WILL START YOU IN BUSINESS!
5. We will start you in a 4-way business (manufacturing, retailing, teaching, etc.), supply you with beautifully packaged uncompetitive merchandise ready to sell and give you a *written sales guarantee!*

PROFITABLE HOBBIES!
6. For those who are hobby minded and want to turn their interesting hobbies into profitable ventures we have dozens of **NEW CRAFTS** and kits for making saleable products out of wood, felt, leather, wire, wax, plastics, metal, etc. We also have instruction kits in Silk Screen Printing, Growing Dwarf Trees, Glass Blowing, Etching, etc.

IT ALL ADDS UP . . .
7. Lack of space prevents descriptions of the many interesting things and plans we have but all in all, it adds up to a **THOUSAND GOLDEN OPPORTUNITIES** for you! And all it costs to get started is only 25c . . . yes, just send 25c for our big 56 page catalog and without extra cost or obligation we will send along other booklets and details of the greatest offer ever to come your way! **Send for it today . . . this might be the lucky coin that will start the most fascinating and profitable venture of your life!**

Here is some of the literature waiting for you. Be sure to send 25c for our very unusual catalog (No. 19 or 20) and discover a new, fascinating world of pleasure and profits!

PLASTICAST COMPANY (Dept. A)
P.O. Box 6737, Chicago 80, Ill. — **P.O. Box 987, Palo Alto, Calif.**

CANADIAN CUSTOMERS: Send 35c for catalog to Canadian Ind. PLASTICS, 1056½ W. Pender St., Vancouver, B. C.

LEARN ELECTRICAL APPLIANCE REPAIRING & INSTALLATION

Start Your Own Business

Revolutionary NEW TRAINING METHOD, trains you AT HOME in just a few short weeks.

You receive big "On-the-job" home training kits, text equipment, audio instructions & practical service training lessons. You learn how to Service, Repair & Install all types of Electrical Appliances & Equipment. How to build & operate your own business, etc.

YOU EARN AS YOU LEARN:

You charge on basis of $3.00 to $5.00 per hour for spare time work!

Write today for your Free Book, and full details about this amazing opportunity for you in modern Electric Servicing.

BIG BOOK FREE

ADVANCE TRAINING, Dept. 103
5944 N. Newark Ave. — Chicago 31, Ill.

WATCHMAKING FREE Sample Lesson

Shows how to clean watches by hand or machine. It's fun . . . profitable too! An exciting hobby or fascinating career. Chicago School of Watchmaking offers complete home study training in professional watch repairing at amazing low cost. All equipment included at no extra charge. No experience needed. Send coupon today! No obligation.

CHICAGO SCHOOL OF WATCHMAKING
2330 Milwaukee Ave., Dept. 423, Chicago 47, Ill.

SEND FREE SAMPLE LESSON ☐ Veteran

Name _____

Address _____

City _____ Zone ____ State _____

Copyrighted material

NOW AT MY RISK! I want you to read the WARNER SUCCESS PLAN

It shows you how to . . . METALIZE BABY SHOES AND OTHER KEEPSAKES

- **how you can start in spare time with your home as headquarters.**
- **how to build—step by step—to big profits and personal independence.**

This is the famous Warner Success Plan—the Plan for Personal Success in your own fascinating business that many men, married couples credit with freeing them from the limits of a pay check and from the drudgery of a time clock.

It gives the exact step by step instructions for starting a business in spare time—without risking the job or steady pay. It shows with pictures, photographs, and drawings exactly how to Metalize Baby Shoes and other keepsakes. It shows how to get the orders coming in—how to expand—how to get others working for you—how to be SURE of at least twice your present pay before you give up your job for a life of personal independence.

15 Million Prospects

There are 15 MILLION pair of Baby Shoes in the country right now ready to be Metalized. Last year alone, more than THREE MILLION more babies were born.

There's not one of these mothers who doesn't want her baby's first shoes preserved forever. The Business is tremendous . . . and never ending.

The Warner Success Plan shows you how to turn this exciting opportunity into cash. Shows exactly how to prepare the shoes, how to put on them a coating of genuine ***gold, silver, or bronze metal*** by simple Warner Electroplating process. Shows how to get the business coming in, how to start in spare time, how to pyramid profits. Shows you how the whole family can have fun while building for an independent future. My own Shop here in Chicago does a Big Business by the very secrets I will now unfold to you.

Read The True Facts

Don't say "Yes" now. You must have ALL THE FACTS. Then decide. First, I want you to read the entire Plan — at my risk. After investigating—after discussing it with your family — then and only then do you decide whether to use the plan and make the small investment necessary to start.

$5.00 An Hour PROFIT

Yes, even in spare time it is possible for a man to finish enough work to pay $5.00 an hour for his time. Think what this can pyramid into when the family helps.

3c MAY START A FORTUNE

Today I want you to do only one thing. Send the coupon. Let me give you all the facts. Remember, what I send you does not cost you a cent beyond the postage you put on your letter to me. With an opportunity like this, a man who has a serious interest in his future MUST investigate. MAIL the COUPON TODAY and see for yourself why so many families have called the WARNER SUCCESS PLAN a "godsend".

WE SUPPLY ALL MATERIALS

You don't have to go "hunting" when Warner is behind you. We supply all materials, all mounts, chemicals, and metals. And you get the low prices made possible by our big quantity purchases and our own manufacture. You send for just what you need and never have any big investment tied up in stock.

MAKE 12 TIMES YOUR MATERIAL COSTS

Remember, the Warner Process is not a cheap imitation "PAINT" process. It is the genuine METALIZING through real Electroplating. And in spite of being the best, your materials cost so little that your profits are 12 Times your material cost. Then, when mothers order the shoes mounted as book-ends, as pictures, as ash-trays or pen sets, you make the BIG EXTRA PROFITS on the beautiful mounts.

WARNER-ELECTRIC CO.
1512 Jarvis Avenue
DEPT. 22
Chicago 26, Illinois

DON'T SEND A PENNY
JUST MAIL THIS COUPON TODAY!

Raymond E. Brandell, Mgr., WARNER ELECTRIC CO.
1512 Jarvis Ave., Dept. 22, Chicago 26, Ill.

As long as it doesn't cost me a cent, I am willing to read the facts, investigate, then give you my decision. Send the facts by next mail. Everything you send now is FREE!

NAME _____

ADDRESS _____

CITY _____ Zone _____ STATE _____

Copyrighted material

Classified Ads only 80c per word per insertion, payable in advance. Minimum ad 10 words. To be included in April issue, copy should be in our office by February 25. No cancellations accepted after February 15.

CLASSIFIED OPPORTUNITIES

POPULAR SCIENCE MONTHLY-351 FOURTH AVE.-NEW YORK CITY 10

1 AUTOMOBILES & MIDGET CARS

SAVE—California Custom Accessories headquarters. Buy direct from original designers. Chrome dash panels, electric push button door-trunk conversions, fender skirts, dual mufflers, lowering kits, speed-dress up equipment. 40 page catalog. Hundreds of photos—25c. Eastern Auto. 3319D South Grand. Los Angeles 7. Calif.

MAKE Cars use diesel fuel. $3.00 for plans. Refiner. Box 292. Columbus. Nebr.

"HOW to buy speed equipment without money." No selling. Information free. Newhouse Industries. Los Angeles 22.

POWERCAR Junior—Real Children's Auto! See details under "Motorcycles-Bicycles."

FREE Motor Magazines; Automobile Literature, old, new and foreign; glossy photos, dealer books, shop manuals—offered with non-profit organization. Write today; get on free mailing list. Auto Maniacs, Inc., Stockbridge, Michigan.

FACTORY Tuneup Specifications for best performance, economy, all makes (Buick to Willys) 1940-1952. Complete data 25c. Goodheart-Willcox, 1321-B So. Michigan, Chicago 5.

50 ANTIQUE cars for sale. Send $1.00 for complete list. List your car free. Send name, year, cost and condition. Robert Meader, 1231 Territorial, Benton Harbor, Michigan.

MAKE your own foreign car body. Polyester-Fiberglas. New Catalog. Instructions, wholesale prices. 10c. Airmailed—35c. Gem-O'-Lite. Box 6862B, North Hollywood. Calif.

2 AUTO SUPPLIES & EQUIPMENT

NEW and used guaranteed parts for civilian and Army cars and trucks. Largest stock in America. Mail orders. Pioneer Auto & Truck Parts Company. 788 W. 13th Avenue. Denver. Colorado.

BRUSH Plating Outfits connect to a battery. No tanks or shop required. Free particulars. Gunmetal Co., Ave. K. Decatur. Illinois.

SPEED equipment from the world's largest distributor. Huge catalogue 25 cents. (Illustrated literature free.) Dealers-wholesale. Newhouse Automotive Industries. Los Angeles 22.

HEADLIGHT Guards. Stops stones. Rims and woven wire chromed. Hinged for cleaning headlights. Fits seal beam equipped cars also MG-TD's, Jaguars. $6.95 pair. Dobard Products. P. O. Box 5194-PS. Detroit 35. Michigan.

INCREASE! Gasoline mileage Three to Five more miles per gallon. Guaranteed Gasoline Vaporizer, also Increases Power. Easier starting. $3.50. Turb-O-Vane. Stockton. Calif.

WEBER Degree Plates. Easy to time and check Cam Shafts. Maximum engine performance. $9.95. Weber. 4200 Whiteside. Los Angeles. Calif.

LACHAPELLE'S Treatment. National & International distributor. Ferns Products. 8120-D Walnut Dr., Los Angeles 1. Calif.

STOP burning oil, piston slap. Seal in compression. Enjoy new smooth power, price $2.95. Butler's Vitapower. Box 196. Hoopa. Calif.

VISOR Clip. Patented device. Fits visor. Holds maps, pencil, paper, etc. Delightful convenience. Long service. Mailed promptly. Only 40c. R.E.K. Mfg., 8530 Woodward. Detroit 2. Michigan.

ECONOMY in Driving Manual usually 50c. Learn to save gas and cut costs. Send 10c mailing cost. Mehren Industries. Box 31-B3. Beverly Hills. Calif.

LIGHT your Dynaflow Dial. kit $1.50; Powerglide kit $1.50. M. Gaiser. Box 25K. Kokomo. Indiana.

"HELL'S Bells" for automobiles. Provoke attention. Amazement. Laughter. Free literature. "Winco's." Box 9525. Dallas. Texas.

DEGREE wheel to set hi-lift camshaft net $9.95 postpaid instructions included. Speed equipment wholesale and retail catalogue 25c. Honest Charley Speed Shop. Box PS3086. Chattanooga. Tenn.

ELECTROPLATE autoparts, novelties, mirrors. Easy, inexpensive home processes. Free booklet. Tyco Metals. Box 13231-FC. Houston 19. Texas.

CAR burning oil? Losing compression? Try Clifford's Compression Seal. $2 Postpaid. Clifford's. 1329 Seventh. Aurora. Ill.

GANE Economy Club News sample free. New economy auto products. Gane Economy Club. 9909-A Santa Monica Blvd., Beverly Hills. Calif.

"WATER Injection". Free descriptive, illustrated information. Neher Industries. LaVerne 6. California.

REMANUFACTURED Motors $75.00 up, exchange or outright. Auto Parts Service. West Salem. Ohio.

YOUR Car starts instantly in zero weather with Quik-Start carburetor preheater. it then functions as gas saver. Find out why! White's. 341 N. Pine. Catawissa. Pennsylvania.

MOTORIST save gasoline by Vacu-mating overrich mixtures. Fits all cars. For Free particulars write Vacumatic. Dept. 1995. Wauwatosa. Wisconsin.

CHEVROLET Owners: Stop tappet noise with Kaye Tappet Silencers. Quality product. Easy to install. Complete set $5.95. Kaye Products. 1321C So. Layton Blvd., Milwaukee 15. Wisconsin.

"SAVE 50%—Speed Equipment. Hollywood Mufflers. Duals. Manifolds. Cams. Chrome Accessories! "Souping Manual—Catalogue" 25c (Circular Free). Almquist Engineering. Milford 3P. Pennsylvania.

MOTORISTS. Truck Owners. Hot Rod & Sport Car Enthusiasts—Here's what you've been looking for . . . largest and Most Complete Automotive Parts & Accessories Catalog in America. 1953 Edition—132 pages (illustrated) shows all parts. from a cotter pin to a complete motor. and accessories for all makes. all years. all models. cars & trucks. Pages and pages for Hot Rod & Sport Car enthusiast. Hollywood accessories to give your car individual styling. 50.000 items listed at Savings up to 50%. Don't miss it! Send 25c Now (refundable). J. C. Whitney & Co., 1919-ET Archer. Chicago 16.

OIL-Vuer helps save engine wear. Shows condition of oil circulating through motor. filter. Easily installed. Thousands in use. $4.95 postpaid. Rogers Automotive. Box 23. Station C. Pasadena. California.

3 AUTO TRAILERS

BUILD your own trailer! Plans for all kinds. Illustrated catalog 10c. Jim Dandy. 125-S Wausau. Wisconsin.

TRAILERS. Build Yourself. Telescoping and conventional models. Slip-on Coach for Pickup Trucks. Parts catalog. Information, pictures 10c. Comstock Trailers. 585S. Parsons. Kansas.

4 MOTORCYCLES, BICYCLES AND SUPPLIES

"BUZZZZ" Magazine. Describes. Illustrates Worldwide Motorcycling. $2.00 year. Sample 20c. 5424-B Sawyer. Chicago 25.

MOTORCYCLE Bargains. New & Used Parts. Early & Late Models. Mail Orders. Harley Davidson Sales & Service. 813 Ohio Street. Wichita Falls. Texas.

WHIZZERS $20; Midget car $15; Motorscooter belt drive $6; 3-wheel scooter car $39.50. Send 25c (35c first class mail) for special circular #22 jammed with sensational bargains in wheels, motors, clutches, motorscooters, midget cars, motorbikes, etc. Gail. 538 Erie. Toledo. Ohio.

RECONDITIONED motorcycles and motors. Chromium accessories. Complete stock Indian parts. Expert rebuilding. Fast service. Indian Motorcycle Sales. Kansas City 27. Mo.

SERVICYCLE $10; Indian Scout $45; Comet motorscooter $20; Whizzer motor $15; Midget car $75. Four airplane tires $3. (Mailorder only). Send 25c for catalogue Number 51 just out. listing the above and hundreds of other bargains in new and used motorscooters, midget cars, homebuilders parts, plans, etc. (35c by first class mail). Midget Motors Directory. Athens. Ohio.

POWERCAR Junior—Real Children's Electric Auto . . . Plenty of power for hills, towing wagons, etc. Catalog free. Mystic River Sales. Dept. Q-2. Mystic. Conn.

WHIZZER $20: Servicycle (good tires) $20; Motorbike conversion kit $25; Cushman motorscooter $25; Harley twin $25. Rush 25c (35c first class mail) for special circular #954 listing many other amazing bargains in motors, midget cars, motorscooters, motorbikes, etc. Associated. Box 1764-CS. Toledo. Ohio.

REBUILT Gasoline Engines. $17.00 to $37.00. Cauffiel Motor Industries. Temperance. Michigan.

5 AVIATION

PROPELLERS, plans, supplies, for snow sleighs-air boats. Catalog 25c. Banks-Maxwell. Box 3301G. Ft. Worth. Texas.

6 BATTERIES, GENERATORS, ETC.

EDISON Nickle odorless storage batteries. 12 to 600 ampere hour. Any voltage. Long guarantee. Literature. Hawley Smith Co., Croton Falls 2. New York.

7 ELECTRICAL SUPPLIES & EQUIPMENT

LAMPS—25c brings bargain parts catalog containing instructions for electrifying oil lamps, vases, etc. Gyro Lamps. 5402B Clark. Chicago 40.

ELECTRIC Pencil: Engraves all Metals. $1.50. Beyer Mfg., 10511-C Springfield. Chicago 13.

EE8 FIELD Telephones. Factory reconditioned, like new. Ea. $22.50. Pr. $44.50. Guaranteed. Select grade Telephone Wire—new, unused, perfect. Selected for outstanding condition. 1 mile reels (wt. 160 lbs.) $38.50. ½-mile reels (wt. 80 lbs.) $19.50. Grade 1. unused. exc. cond. . . 1-mi. $22.50. ½-mi. $12.50. Grade 2. unused. good cond. . 1-mi. $17.50. ½-mi. $9.00. Many other phones, inter-com. units, telephone wires available. Free folder. Loris Sales. Box 1896-A. Sacramento. Calif.

FREE—War Surplus Catalog—Bargains Galore. Welders. Motors. Generators. Hydraulics. Pumps. Kits for assembling your own. other items. Save. LeJay Company. Minneapolis. Minnesota.

LAMP Supplies — Wholesale — any amounts. Prompt shipment on all parts for repairing and building lamps. Illustrated catalog 15c. Brown Specialties Co., Box 501—Wellston Sta., St. Louis 12. Mo.

P-1 AIRCRAFT Generators. 200 Amps. 27 volts DC, Like New, weight 65 lbs., $18.50 each. New double voltage generators 115 volts. 2500 watts AC high cycle with 125 amp. 28 volt DC output. Only $24.50. Build your own welders & light plants. Plans included. Card's Wholesale. 6221 Edgewood Dr., Niagara Falls. N. Y.

8 WELDING, SOLDERING

NEW tiny soldering iron, pencil size. ⅛" diameter tip pin-point accuracy. Small tool bargains. Free literature. White's. 341 Pine St., Catawissa. Penna.

"LEARN Heliarc Welding." Illustrated manual shows you how to weld. Send $1.00. Welding. P. O. Box 9. New York 57. New York.

Copyrighted material

A.C. Welders. Four sizes. Lowest Prices. Free Literature. Holgerson's Service, Canton, Kansas.

9 MACHINERY, TOOL SUPPLIES, ETC.

MOTOR driven rotary Hone sharpens all Keen Edge tools. A must for all shops. Immediate delivery. Moore Industries, Fredonia, Pennsylvania.

POWER tools, equipment wholesale prices. Free bulletin. Homecrafters Cooperative. Grand Rapids 6, Michigan.

FREE! Complete catalogs of precision tools for any job. Big stocks—famous brands: Lufkin, Starrett, Brown & Sharpe. Immediate delivery. Wide selection. Write for your copy today! Mid-City Hardware & Supply Co., Dept. PS. 318 South Halsted Street, Chicago 6, Illinois.

IF you have hobby equipment for sale or swap we will give you free catalog space. Send details and price. Homecraft Exchange. 6028 Rosslyn, Indianapolis, Ind.

SCREW gage checks threads per inch and 38 screw sizes. Free details. Faas Laboratory. 13E Dogwood Road, West Orange, New Jersey.

10 ENGINES, MOTORS, ETC.

WINDING Data, listing 225 motors, single and three phase $1.00. Motor Data, Box 7631, Kansas City 3, Mo.

ALTERNATING Current Generators 750 Watt $38.50. 5000 $135. Motors ½ horse $15. ¾ $22. 1 $35. Butler, 1885 Milwaukee, Chicago 47.

REBUILT Gasoline Engines. $17.00 to $37.00. Cauffiel Motor Industries, Temperance, Michigan.

11 BOATS, OUTBOARD MOTORS

FULL size, cut to shape boat patterns, blueprints. 7½-38 feet. Illustrated "Build a Boat" catalog 25c (coin). "How to Build Boats" book $1.00. Cleveland Boat Blueprint Co., Dept. A-77, Cleveland 13, Ohio.

NEW, used, rebuilt marine motors. Marine conversions, fittings. Free Catalog. Stokes Marine Supply, Dept. 23, Coldwater, Mich.

OUTBOARD Motor Parts—New—Used for all makes. Send stamp for price quotation, listing par s needed. Outboard Motor Mart, Inc., 229D State Street, Boston, Massachusetts.

NOW Faster Than Ever! Champion Boats—the choice of champions now available to you! Easy-to-read plans; easy-to-assemble kits; or easy-to-afford custom built speed boats. (18 models, outboard and inboard). Send 25c today for multicolored, illustrated catalogue. Champion Boats, 1524 W. 15th St., Long Beach, Calif. Dept. 23-B.

GET our big 224 page 1953 Marine Hardware, Boat Kit & Equipment Catalog. Send $1.00 for handling costs, refunded with first order. Garland Frasher Marine Sales, 540-F 31st Street, Huntington, W. Va.

SAVE 2/3 Cost. Assemble your own boat. We furnish parts. No experience necessary. Rowboats, Cruisers. Illustrated Catalog 25c. Midwest Boat Company, Menomonee Falls 1, Wisconsin.

BUILD marine engines with Federal Conversion Kits. Federal Marine Motors, 9011 Cottage Grove Ave., Chicago 19, Ill.

LARGEST line of racing and pleasure inboard speedboat fittings and speed equipment. Hundreds of special items. Big illustrated catalog 25c. Debbold's Marine Supply, Lynwood 1, California.

CONVERT Fords and Jeep to 100% marine engines with Osco's world famous Convo-Kits. Deluxe catalogue 25c (coin). Oscomotors, 3627F Lawrence, Philadelphia 40, Penna.

MARINE Conversions, manifolds, water pumps, transmissions converted reverse gears, etc., most complete line on the market. Barr Marine Products Co., 2706 E. Castor Ave., Philadelphia 34, Penna.

CURE that leaking boat with Fiberglas —plastic covering. Ends caulking and painting. Nationally approved process. Complete instructions. New low prices. Industrial Plastics, 3807 Harrison, Oakland 11, California.

PERFECT boat coating. Polyester-Fiberglas. Permanent protection. Our new catalog tells you how, and how much. 10c. Airmailed—35c. Gem-O'-Lite, Box 6862A, North Hollywood, California.

MARINE conversions for Ford and Jeep engines. Catalog 10c. Lehman Manufacturing Co., 972A Broad St., Newark 2, N. J.

PLANS: Inboard-outboard runabouts, cruisers, sail. Wood, plywood, welded steel. Advise requirements. John B. Clark, N.A., 329 Kenmore, Bay Village, Ohio.

STEERING-Wheels, windshield brackets, from $7.95. Attractive polished Fittings. "Waterskis" aquaplanes, prefabricated boat kits—complete. Skiffs $32.00—Runabouts $97.00. Guaranteed satisfaction. Bargains Galore. Hundreds accessories. Folder free. Marine, Box 681, Mendota, Minnesota.

12 BODY-BUILDING COURSES, JIU JITSU & ATHLETIC EQUIPMENT

GETTING Bald? Benefit by my experience. Read "I'm Growing Back My Hair." $2.00. Box 784, University Branch, Coral Gables 46, Florida.

GAIN Weight. Muscle fast! Proven method. Confidential information. Cambria, Box 26-D, Cambria Heights 11, N. Y.

100 TRICK Knockouts for self defense. $1. 1c each. Lincoln, 529 Main, Evanston 2, Illinois.

BARBELLS, Dumbbells, Exercise equipment. Courses. Free booklet. Good Barbell Co., Reading, Penna.

BUILD powerful arms, chest, shoulders. 22 exercises. $1. Fonsad Studio, Box 601-C, 1100 Market Street, Wilmington 99, Del.

14 FIELD GLASSES, TELESCOPES

POWERFUL astronomical telescopes easily made. Perfect lenses and instructions; 45x and 100x—$3.50; 45x, 100x, 200x, and 400x—$6.00. Full power, clear vision guaranteed. Instructions alone 10c. Suffolk Science Service, Riverhead, New York.

WAR Surplus Bargains. Binoculars, Telescopes, Sextants, Millions of Lenses, Prisms, Reticles, Eyepieces, Objectives, etc. Mail 10c for Big "Catalog CN." Send $1.00 for Stock CN-10-piece Lens Kit and Big Instruction Booklet. Edmund Scientific Corp., Barrington, New Jersey.

BINOCULARS, telescopes, microscopes. Our 20th year of leadership in optical values. Bargain catalog free. Brownscope Co., 24 West 45th St., New York.

"FREE Catalogue! Thousand war surplus optical bargains. Lenses, Prisms, Telescopes, Binoculars, etc. Send $1.00 for 10 Lens Hobbyist Set and Project booklet. G. Jaegers, 691 West Merrick Road, Lynbrook, New York.

SAVE! Save! New Binoculars! Free Catalog. Free Book, "How To Select Binoculars." Write Today! Bushnell's, 43-P62 Green, Pasadena 1, Calif.

AMAZING prices, binoculars, telescopes, microscopes. Free trial. Folder, "Binocular Selecting" optical catalog free. Prentiss Importers, Mercury Bldg, West Los Angeles 25, California.

FREE 1953 40-Page, 3 color catalog! 67 different models! United Binoculars, 9043 S. Western, Dept. A-7616, Chicago 20.

GIANT 100 power completely assembled telescope with hardwood tripod $10.00. Telescopic Cameras, Manorville 5, N. Y.

REFLECTOR telescope kits—Precision eyepieces, Mirror cells, Diagonal holders, Tubing, other optical bargains. Free illustrated bulletins. Esco Products, 911 Willow Ave., Hoboken, New Jersey.

INTRODUCING new improved 20x Telescopes—3 sectional—Chrome. Handy pocket size—only $8.75—5 day money back guarantee—Check, money order. Westchester Sales, Dept. PSC-2, P. O. Box 304, Larchmont, New York.

PARADISE for Hobbyists. Microscopes, Telescopes. Supplies. Other items. Free lists. Nassau Optical Co., 9 W. Greenwich Avenue, Roosevelt, L. I.

GIANT astronomical telescope complete with 6 ft. tripod, 45x, 100x (10,000 area magnification) eyepieces and sun projector lens. Full power, clear vision guaranteed. $15.00 f.o.b. factory. Suffolk Science Service, Dept. TC, Riverhead, New York.

MICROSCOPE Sale . . . Zeiss dissecting German Laboratory. Reichert Spencer, Rasmussen-Reece, Amsterdam, New York.

BINOCULARS: German Military 8x60 wide-field Coated Optics. New Condition. $150.00. Rasmussen, 360 Guy Park, Amsterdam, New York.

POWERFUL telescopes easily made. Lenses, erector, focusing tube, instructions for making 40X, 100X, 200X, 400X telescope $6.00. Telescopic Cameras, Manorville 5, New York.

15 SPORTING GOODS, GUNS, FISHING TACKLE, ARCHERY, TRAPPING

120 PROFUSELY illustrated pages, antique pistols, swords, daggers, armor, etc. 50c. Robert Abels, PS860 Lexington Ave., New York 21.

SAVE on Gunsmithing, Jap Conversions, Scopes, Loading Tools. Catalog 10c. Cougar Arms Company, 587 Ferris Street, NW, Grand Rapids, Michigan.

BOWS And Arrows! Raw materials. Send 5c for catalog. Illustrated Handbook "How to Make and Shoot Archery Tackle" 75c. Stemmler Co., Dept. 1, Manorville, L. I., New York.

FISHERMEN—make your own sinkers with our molds. Free illustrated booklet. Reading Instrument Co., Box 78, Reading, Penna.

CUSTOM Gunsmithing, Restocking, Rebluing, Jap Conversions. E. M. Bryant, 1113 So. Lea, Roswell, New Mexico.

MOLDS: Handled and Hinged for Fishermen to make their own Sinkers, Jigs, Squids and Casting or Spinning Lures. Entertaining and profitable. 400 sizes and styles from $2.95 up. Special molds made to order. Free catalog. Sweet's Molds, Tonawanda 3, New York.

5,000 BARGAINS, firearms, binoculars, war relics, catalog 50c. Smith Museum, Runnemede, N. J.

JAP rifles altering American shells $6.00, catalog 5c. TP Shop, West Branch 10, Michigan.

OVER 500 guns, modern, obsolete. List 10c coin. Ed Howe, 26 Main, Coopers Mills, Maine.

2000 GUNS! Kentuckies, Westerns, Luger, Mausers, Sporting Arms. Expert Gunsmithing. Indian relics, Medals. Buy-Sell-Trade. Bargain catalog 50c. Ed Agramonte, 201 Warburton, Yonkers 2A, N. Y.

16 CAMPING EQUIPMENT & TENTS

TENTS, camping equipment. 100 page free catalogue. Mor-San Sales, 10-21G 50th Avenue, Long Island City 1, N. Y.

17 DOGS, BIRDS, HAMSTERS, RABBITS & PETS

MAKE Big Money! Raise Chinchilla Rabbits. Cash Markets Supplied. Write Today! Rockhill Ranch, Sellersville 16, Pa.

RAISE Mink: Free booklet, pen, plans, inside "secrets" feed care. Mink are money makers. Investigate today. Lawrence Molgard, Brigham City 13, Utah.

YOUNG Parrots—make fine talkers. Herb Miller, 1911-N, Lubbock, Texas.

700 BRED Mink booklet pen plans 20c. Lake Ontario Mink Ranch, Gravel Road, Webster, New York.

SALE Tame Red Squirrels, Breed, Dewey H. Balch, Castleton, Vermont.

RAISING Guinea Pigs, profitable. Booklet free. Taylors, B426B, Hapeville, Ga.

NATURALIST'S Catalog, 10c. Chameleon 55c. Newt 50c. 200 Mealworms $1.00. Quivira Specialties, Topeka 10, Kansas.

BIG profit raising pet Hamsters. Free booklet. B685S, Gaffney, South Carolina.

QUALITY registered guaranteed Chinchillas. Low Payments. Price list free. Learn facts, booklet $1.00. Midwestern Chinchilla, Inc., Britt, Iowa.

RAISE Guinea Pigs. Very Profitable. Write Winfield Harrison, Fitzgerald, Ga.

18 FROG RAISING

"FROG Raising!" New Book tells how. Illustrated literature Free. Broel-B, 1035 Marlborough, Detroit 15, Michigan.

19 FARMS, OTHER REAL ESTATE

FARM-Ranch Opportunities. Favorable conditions, Washington, Minnesota, Montana, Idaho, Oregon, North Dakota. Literature, farm descriptions. Specify which state. J. W. Haw, 120 Northern Pacific Ry., St. Paul 1, Minn.

MISSOURI land $4.50 acre; Oklahoma $6.00. Payments. Free list, maps. John Calvert, Winter Haven, Florida.

Copyrighted material

FLORIDA. New Lake County development adjoining Ocala National Forest. Best fishing, hunting. Safe from bombs. Nice homesites $245 at 10 monthly. Folder free. Winfree Vernor, DeLand, Florida.

CALIFORNIA Ranch Lands. 50c to $5 acre minimum bid. Farm-ranch-hunt-fish-retire. 10c brings illustrated land catalog, outline maps. Tax Land Sales, Box 2350BX, Hollywood 28, Calif.

STROUT Catalog—Free. Farms, Homes, Businesses. 31 States, Coast-to-Coast. 3,446 bargains. World's Largest. Our 53rd year. Strout Realty, 255-ZB 4th Ave., New York 10, N. Y.

FLORIDA—5 acres high dry land near beaches, raise fruits and vegetables. Only $495.00, $10.00 down, $10.00 month. Information write G. B. Potterfield, Owner, Union Building, Department P, Charleston, West Virginia.

FLORIDA Highway Tracts—$345. Payable $15 monthly. Big, beautiful Country Estates on U.S. Highway 231—shortcut Route from Chicago direct to Florida—now building 4-Lanes. Located in famous Panama City Pleasure Resort Area. World's finest beaches. Many lovely lakes. Wonderful fishing, hunting. Grow fruits, berries, vegetables, flowers. Poultry. Cheap electricity. Desirable Community. Fine investment. Free Booklet. Douglas Wood, Box 873, Houston, Texas.

5-ACRES & Independence—Book; Write for Free Photo & details: Landcraft, Dept. B1, Cole Camp, Missouri.

20 TREES, SHRUBS, ROOTS, HERBS

TREES And Shrubs—Raise your own from seed for shade, windbreak, snow fence, ornament, erosion control, etc. For free planting guide—price list, write Woodlot Seed Company, Norway 2, Mich.

GROW miniature trees. Details free. "Revealer," Box 37S, New York 53, N. Y.

FREE Herb Products—Liniment Except postage 25c. Leonard, 1669 Pinewood, Toledo, Ohio.

21 POULTRY & SUPPLIES

POULTRY Farmers—Broiler Growers—Turkey Raisers read the new American Poultry Journal for latest ideas and greater profits. 12 months, 50c. Special offer, 4 years, $1.00. American Poultry Journal, 182 North Wabash, Chicago.

RAISE Turkeys the new way. Write for free information explaining how to make up to $3,000 in your own backyard. Address—National Turkey Institute, Dept. 57, Columbus, Kansas.

RAISE pheasants on the $100 week plan. Little capital and space can make you independent. Free details. Great Central System, Columbus 6, Kansas.

22 PROFITABLE OCCUPATIONS

DETECTIVES Earn Big Money. Excellent opportunity. Detective Particulars free. Write, Wagoner, P-125 West 86th, New York 24.

BE independent, be secure, have your own profitable business—earn $20.00 and more a day making beautiful, fast-selling lamps at home. No equipment needed. Illustrated course teaches you quickly. Course, parts catalog, wholesale price list—only $2. Gearon Co., Dept. 200-A2, 27 S. Desplaines, Chicago 6, Ill.

WANT A Diesel Job? New Opportunities to increase income. Higher Pay. More Money. We can help you Qualify. Tools. Shop method home training. Write today. Diesel, Tractor, Heavy Equipment Division, Interstate Training Service, Dept. 2B, Portland 13, Oregon.

"HOW to Make Money With Home Workshop" describes amazing methods used by hundreds of successful craftsmen. Tells what to make. How to sell workshop output spare time. Write at once for details. Craftsman, 115B2, Worth Street, New York City.

$10,800 PROFITS! Your own Mailorder Business! No Capital Risk! "Success Plan" (worth $2) Free! Write today! Treasury, 149 Storer, New Rochelle P-8, New York.

$5000 FROM half acre growing Ginseng, crop bought. Particulars 10c. Associated Growers, Sperling, Manitoba.

GROW living miniature trees from seed. 12" tall. Flower, bear fruit. Terrifically profitable hobby. Free details. Miniatures, 1020 Richman, Fullerton 11, Calif.

BUY Wholesale thousands nationally advertised products at big discount. Free "Wholesale Plan." American Buyers, 628-S Linden, Buffalo, New York.

GROW Mushrooms. Cellar, shed, and outdoors. Spare, full time, year round. We pay $3.50 Lb. We paid Babbitt $4.165 in few weeks. Free Book. Washington Mushroom Ind., Dept. 101, 2954 Admiral Way, Seattle, Wash.

RAISE fishworms, easy, profitable, complete instructions 25c. Huffman's, Rives Junction, Michigan.

FLAGPOLE and Smokestack painting. Perfect part time trades. Details free. Skyline Co., Fairchance 2, Penna.

$1.00 BRINGS this unique, beautiful success story, "How I Make My Home Pay", not a-dream nor a-scheme. Box 411, Fontana, Calif.

$40.00 WEEKLY. Make growing mushrooms. Dominion Patent 331,583. Free spawn with Order. North American, 169Y Yonge, Toronto, Canada.

WINDOW Display Business. Write Larry Vandeman, Box 104-a, Hinsdale, Illinois.

EARN $20—$80 Week! Helping us advertise. Home operated, simple, respectable. Instructions—supplies—$1 (Refunded). Modern Industries, Columbus, Kans.

FREE Book "505 Odd, Successful Businesses." Work home! Expect "Odd"! Pacific—37C, Oceanside, Calif.

FREE Booklet reveals amazing secrets behind 301 new profitable enterprises! Many mailorder! Includes confidential instructions for starting wholesale buying service. Deumant Publications, 85-T Deumant, Kenmore 23, New York.

RAISE Fishworms Backyard. Worthwhile profits! Complete instructions 25c. Ozark Worm Farm-V, Willow Springs, Mo.

EXTRA Money. Spin angora wool at home. Angora House, PSM, Springfield, Ill.

RAISE Ginseng. Roots bring fortunes. Free information. Fezler, Patchogue, N. Y.

23 BOOKS & MAGAZINES

ADULT Books—Illustrated Comic Booklets. 20 for $1.00. All different. Free gift with each order. V. M. Rogers, Dept. PS, Box 14738, Cimarron Station, Los Angeles 18, California.

BOOKS—Booklets, Art, Humor, etc. Illustrated catalog 10c. Aladdin Book Co., 210-P Fifth Avenue, New York 10.

SPARETIME Profits Taking Subscriptions. All Magazines. Wholesale Catalog Free. Cassell Agency, Westfield 1, N. J.

WHY Things Happen. Troubled about personal misfortunes—unhappy world conditions? The inspiring book, "The Divine Providence," by Emanuel Swedenborg (1688-1772) will help answer your questions. 640 pages, 25c postpaid. The Swedenborg Foundation, Section 11, 51 East 42nd Street, New York City 17.

BOOKHUNTERS! All Subjects. Send Wants! Jaher Book Service, 620-K East 178 Street, New York 57.

ATHEIST books. Catalogue free. Truth Seeker Co., 38 Park Row, New York 8.

HARD to find books quickly supplied. Murray Novick, 40 Arch Street, Springfield 7, Mass.

AMAZING New Adult Book Bargains. Send dime. Paul Vallon, 63 Perry, New York 14, New York.

BOOKS, self help, instructional. Many mint editions, collectors items. Free list. Mutual, Section 261, Wilhoit Building, Springfield, Missouri.

BOOKHUNTERS! Scarce, unusual, miscellaneous books supplied. Atlantic Book Service, 2 Lawrence, Charlestown 29, Mass.

USED Pocket Novels, 8 for $1.00. Stamp brings list. Trunkat, Glenshaw 3, Penna.

ADULT Book Bargains. Catalogue. Samples, 10c. Arkay, Box 2052, Los Angeles 53, Calif.

ADULT books, Tricks. "Illustrated Comics" 10—$1.00 And Gift. Catalogue 10c. Rothleder, "102PSB" Cathedral Station, New York 25.

BACK-Date magazines. Specific issues; years. Arkell's, Northridge, California.

WORLD's greatest authority of hand-analysis, Dr. Ranald, makes available his book, "How To Know People By Their Hands." Sold over 255,000 copies. Introductory mail order offer, only $1.00. Ranald, 450 South Western, Los Angeles 5.

NATIONAL Geographic Magazines 1888-1952 Any Issue. Periodical Service, Box 465-PS, Wilmington, Delaware.

BACK number magazine specialist, specific requests Ellis Chalfin, 410 East 17th Street, Brooklyn, New York.

OCCULTISM, "The Mysteries," Self-Unfoldment, Yoga, Theosophy, Rosicrucianism, Freemasonry. Books. Courses. Catalog. Jordan's, 1130 Keller Avenue, Louisville 13, Kentucky.

INTERESTING adult books—novelties—illustrated comic booklets 24—$1.00, catalogues 10c. Kogan, 1032PS Church Annex, New York 8.

24 HYPNOTISM

HYPNOTISM—Homestudy! Degree! The Hypnology Institute, Box 723-E, Covington, Kentucky.

HYPNOSIS and Self-Hypnosis, complete course. Free details. Columbia Company, 5864-A Hollywood Blvd., Hollywood 28, Cal.

FREE Illustrated Hypnotism Catalogue. Write: Hypnotist, 1324 Wilshire, Hollywood 17P, California.

DYNAMIC Self-Hypnosis: first lesson—"101 Amazing Feats". 25c. Lloyd Collins, Appalachia, Virginia.

25 MAGIC TRICKS, PUZZLES, ETC.

MAGICIANS'. Gamblers' secrets exposed. Cards, Dice, Punchboards, Slot Machine. Catalog 10c. Book Co., Box 671, St. Louis 1, Mo.

FREE trick and large illustrated catalog—35c. Lerro's Magic, 8111 Fifth Avenue, Brooklyn 9, N. Y.

NO. 29 Edition Catalog 500 Tricks now ready. Send 10c for your copy, containing latest in good magic for pocket, parlor, stage. Douglas Magicland, Dept. 2, Dallas, Texas.

200 ELECTRIC stunts, 110 volts. $1.00. Cutting Sons, Los Altos, California.

DO Magic! Catalog and rope trick. 25c. Howard's Mystery Mart, 177 Park, New Haven, Conn.

SEND 10c for Catalogue of Tricks. West Texas Fun House, Box 2929, Odessa, Tex.

MAGIC—Jokes, Big Magician's catalog 10c. Top Hat, 529X Main, Evanston, Ill.

HYPNOTIZER is a wonderful trick—the best you've ever seen, guaranteed! Invest $1.00 in Fun and laugh with your friends. Hypnotizer, 208-B Iini Way, Aiea, Oahu, Hawaii.

2500 TRICK Catalogue (512-pages), pocket, parlor, stage. World's Finest Magic. Catalogue $2.00 (dollar trick included free). Kanter's, S-1311 Walnut, Philadelphia 7.

TRICKS Jokes, novelties, Books. Fun-Galore! Gift Catalogue 25c. Rothleder "102PST" Cathedral Station, New York 25.

FREE magic vanisher with illustrated catalog 25c. Maj Magic, 23 Friends Lane, Westbury, New York.

GUARANTEED Magic Tricks! Catalog free. Newton Magic Co., Bonham 8, Texas.

MAGICIAN'S illustrated catalog and free trick 35c. Terry's Magic Studio, 1921—66th Street, Brooklyn 4, New York.

HUNDREDS Sensational Tricks!! Magic!! Puzzles!! "Monkey Business Funmakers"!! "Jumbo" Illustrated Catalogue!! 10c. Andersen's, 6815S Ardmore, Chicago 31.

BE a Magician. Large professional magic catalog of latest tricks. 35c. Ireland, F-109 North Dearborn, Chicago.

DECK of cards changes color at operators command. Fools magicians. Instruction how to make. Send $1.00. Miracle Magic, 3330 Grant, Evanston, Illinois.

26 COIN COLLECTING

GET Profit and Pleasure in collecting old coins. Send 10c for 56-page illustrated coin catalog. You'll be delighted with it. Send for it now. B. Max Mehl, 374 Mehl Building, Fort Worth, Texas. Largest rare coin establishment in U. S. Established 53 years.

FREE! Foreign coin, banknote and Coin Collectors' Illustrated Catalog to approval service applicants. Send 3c postage. Tatham Coin Co., Springfield-50, Mass.

$30 GENUINE Confederate money for $1. Orleans Coin Shop, 517 Baronne St., New Orleans 12, Louisiana.

Copyrighted material

OLD Money Wanted. Do you know that Coin Collectors pay up to $100.00 for certain U. S. Cents? And high premiums for all rare coins? We buy all kinds. Send 4c for Large Coin Folder. May mean much profit to you. Numismatic Co., Dept. 30. Fort Worth, Texas.

UNITED States Coins! Bargains! Sullivan's, 127-D East Fourth, St. Paul 1, Minn.

SET nine Japanese invasion notes for U. S. $2.00. Illustrated coin catalogue 25c. Shultz, Salt Lake 10, Utah.

WANTED—1894-S dime: pay $500.00. Certain 1913 nickel $1,000.00. 1901-S quarter $20.00 to $150.00. Hundreds of others. Know their true value. Complete Illustrated Catalogue 25c. Worthycoin Corporation (D-301) Boston 8, Massachusetts.

FORTY different liberty head quarters, $21.00. Complete U. S. coin list for stamp. Johnson's 644 E. Valerio, Santa Barbara 6, Calif.

COIN Collector's greatest bargain—Huge monthly magazine and wooden nickel 10c. Lawrence Brothers, Anamosa, Ia.

TWENTY Indian head cents different dates $1.00. Sayers, 1000 Unaka, Johnson City, Tennessee.

27 OLD STAMPS WANTED

I Will Pay $100.00 each for 1924 1c green Franklin stamps rotary perforated eleven (up to $1000.00 each unused). Send 10c for Large illustrated folders showing Amazing prices paid for old stamps, coins & collections. Vernon Baker, PS-32, Elyria, Ohio.

28 STAMP COLLECTING

OPPORTUNITY! Gorgeous lot with Triangles, Diamonds, Giants, Midgets, Flags, Airmails, and Railroad Stamps. Also Guiana, Djibouti, Mongolia, Angola, New Caledonia. Etc. Everything only 10c to Approval applicants. Evden, Box 128, Valley Stream 5, N. Y.

AMAZING Offer! 200 United States stamps—including commemoratives, airmails, high denominations to $5.00—Only 10c to Approval Applicants!! Illustrated Bargain Lists free. Mystic Stamp Co., Dept. 55, Camden, New York.

FREE—Complete set of Famous Americans, Flags, Parks and Presidentials to approval buyers. Send 3c for 15 of the above stamps plus full particulars. Triboro Stamp Company, 145 Nassau Street, Dept. 202, New York 28, N. Y.

1,000 UNIQUE Colorful attractive mounted stamps 1c-2c each. Rushed. Niagara Stamp Co., Niagara-on-the-Lake 72, Canada.

300 STAMPS For Only 10c! This mammoth value includes Airmails, Pictorials; stamps from strange countries cataloguing up to 25c each!! Also approvals. Mystic Stamp Company, Camden 55, New York.

POLAR Bear Triangle; Giant George Washington, Six Colored Ecuador, Arctic Triangle, first American commemorative, Corsica, Devils Island, others. Everything free with approvals. Capital Stamps, Little Rock 10, Ark.

FREE Stamp Collection:—100 different stamps from Europe, Africa, Asia, Scandinavia, Balkans, etc., 3c to approval applicants. Tatham Stamp Co., Springfield 50, Massachusetts.

FREE—Illustrated Catalog! Kenmore, Milford C-58, New Hampshire.

U. S. Army & Navy Heroes on Stamps; 10c with United States approvals. Locust, Box 305-A, Harmon-On-Hudson, N. Y.

200 DIFFERENT, including Roosevelt triangle, 5c to approval applicants. S. Avalon Stamp Co., Springfield, Mass.

FREE, Scott's International Album. Other big premiums. Full particulars with approvals. Raymax, 68-X Nassau St., New York 38.

FLAG Stamp—Free with hygrade U. S. approvals. Weniggman's, 1933 Patterson, Chicago 13.

ALBUM! Capacity over 1000 stamps! Only 10c! Stampmart, Hartford 1, Conn.

312 MIXED U. S. only 10c to "Gold Nugget" approval applicants! Nothing like them. Kessel's, Folsom, California.

NUDES Set; Colorful approvals—10c! Atlas, 2830-P Eisenhower, Racine, Wisc.

77 DIFFERENT United States—25c. Approvals. Utechts, 1143-A North Keeler, Chicago 51.

200 EXOTIC Japan Stamps—10c! Kenmore, Milford K-58, New Hampshire.

WOW! 203 All Different Germany 10c! Zeppelins, Semipostals, Airmails, High Values, etc. to new customers. Jamestown Stamp, Jamestown 509, New York.

WE give you—mammoth international albums, Scott's catalogues, hinges, complete accessories, when you buy our wonderful foreign approvals. Don't write unless you intend to buy. But don't buy elsewhere without comparing our more generous offers. Bargain Stamps, Santa Ana, California.

327 DIFFERENT Stamps 25c! Including Early Canada, Newfoundland, British Colonies, Vatican, Red Russia, Hitler Heads, Indian States, Animals, Airmails, French Colonies, rarities, unusuals. Every stamp different. Rare bargain only 25c with our Bargain Approvals. Money back guarantee. Niagara Stamp Co., Niagara-on-the-Lake 62, Canada.

VALUABLE Airmail book plus gorgeous world-wide airmail collection 10c. Includes $10,000 stamp, zeppelin, scarce triangle, many others with beautifully illustrated book, only 10c with choice approvals and bargain lists. Jamestown Stamp Co., Jamestown 707, New York.

WE Give Away—Your Choice Latest Scotts Albums; Catalogue and available philatelic accessories. Realize—You Get These Worthwhile Rewards When You Buy From Our Better Foreign Approvals. Write Today For Full Particulars Sent With Trial Approval Selection. Americas' Stamp Service, Riverside 2, Calif.

FREE! Big Illustrated Catalog listing everything for the Stamp Collector. Approvals. Harrisco, 204 Transit Bldg., Boston 17, Mass.

FREE! Powerful Magnifying Glass for 5c Post. Bargain lists and approvals. Jamestown Stamp Co., Dept. 202, Jamestown, New York.

MINT King George Coronations from 5 different British Colonies only 10c with approvals. Walter Welles, Box 1246-V, Church St. Station, New York 8.

GREAT Free Offer—Weird mosquito stamp, thrilling bicycle race, gorgeous orchid, colorful native drummer, gigantic diamond airmail, stamp albums, all to our approval buyers. Bell Stamp Service, Dept. W-4, Bell, California.

RARE octagonal stamp, giant triangle, gorgeous diamond, also mammoth and midget stamps given to foreign approval buyers. Gifts with purchase including Scott's International $6.00 album, also latest Scott catalogues. Plymouth, Dept. A-3, Bell, California.

TWO Mint Pictorial Sets; San Marino, Vatican, 5c. Request approvals. Silas Stamps, Box 55-V, Triborough Station, New York 35, New York.

SOUTH American Approvals. Excellent prices. Casilla 2861, Correo Central, Buenos Aires.

50 DIFFERENT U.S. 5c. Price lists included. Bookman, Maplewood 1, N. J.

BIRD Collection features Angola multicolors; bicolors; triangles. Free to approval buyers. Pleasure Stamps, 1865A—52nd, Brooklyn 4, New York.

FREE "Stamp Finder." Tells country to which any stamp belongs. 32 pages profusely illustrated. Garcelon, Calais 19, Me.

FREE Stamp Zoo! Rhinoceros, Snake, Giant, Pygmy, Emu, Kangaroos, Koalabear, Kookaburra and other wild animals. Free with exciting approvals. Niagara Stamp Co., Niagara-On-the-Lake 52, Can.

65 ALL Different U.S. Stamps includes 19 Century, Commemoratives, Airmails and $5.00 Stamp. Only 10c. Approvals. Willett Co., Box 507M, Port Chester, N.Y.

300 DIFFERENT given free with approvals. Postage 3c. Windsor Stamps, 1435 E. 67th Place, Chicago 37.

FINE Approvals. Fast, personal service. What countries do you prefer? I'll send their stamps. Milton Skinner, 438 Locust, Long Beach 12, California.

BIG bag mixed stamps. Enormous quantity. $1.00. Longacre Shop, 583p Sixth Avenue, New York City 11.

DEALERS Wholesale catalog. Postage 3c. Franksco, 5031 Queensbury, Baltimore, Maryland.

CANADIAN Collections Free—Includes early Victorian Issues—Jubilees—High Values—Commemoratives—Special Issues—Newfoundlands—Pictorials, etc., etc., together with Philatopic Magazine all free. Send 5c postage. Empire Stamp Company, Dept. PR, Toronto, Canada.

1000 FINE Mixed U.S. Stamps 25c. Wright, 201 Mealey, Hagerstown 2, Md.

1/10 CATALOGUE while our supply lasts on many over stocked foreign stamps. Try them on approval. Premiums on purchases. Roseland Stamp Co., Dept. 9-E, Spring Lake, Michigan.

FOREIGN approvals on request. Norman's, 2418 Kensington Street, Harrisburg, Penna.

RARE bargain, $1.25 Cat. alluring South Pacific Islands 10c with approvals. H. Offerle, 1920 Palmgrove, Los Angeles 16, California.

WOW!! 100 different Germany only 5c to approval buyers. Modern Stampco, Box 12S, Wakefield Station, New York 66.

UNITED States Price List Free. James Cunningham, 101B Terrace, Hasbrouck Heights, New Jersey.

FISH, Lion, Earthquake triangles, Benelux lands 25 different, all 3c. Approvals. Hathaway, Box 211, Hempstead, N. Y.

SUPER Assortment! Rhinoceros, ships, loveflower, triangles, map among 25 unusual beauties from Comoro, Ifni, Sahara, etc. Only 10c with select approvals. Prompt, courteous service always. Wm. Kuehl, 3125 East K, Tacoma 4, Wash.

POSITIVELY Free Scott's $12.00 international album, 1953 catalogues. Other premiums, to approval customers. Claire's, 7402 Bay Parkway, Brooklyn 4, New York.

1000 MIXED Stamps 25c. Pound Bag $1.00. Book Nook, Willmar 61, Minnesota.

LOOKING for Bargains? Try our 1c & 2c approvals mounted in books of 1,000. We believe in both quantity and quality. First try will satisfy. Clark Stamp Co., Dept. U-2, Muskegon Heights, Michigan.

81 MULTI-Colored Flags of the World—only 15c. Kenmore, Milford F-58, N. H.

OLD scarce U. S. seconds on approval. Slightly defective, bargain prices. Hearnfeld, Clintonhill Station, Newark 8, N. J.

10 COMPLETE sets, 25c. Free Lists. Pinkerton, Box 81-M, Bethlehem, Penna.

FREE Bahawalpur Jubilee set to approval applicants. Lighthouse, Box 1516 Colorado Springs, Colorado.

50,000 STAMP Grabags 25c each. Anderson, 630a Bingaman, Reading, Pa.

FREE! 3 Sensational Hungary diamond stamps. Extra 3 San Marino triangle airs, all to new approval applicants. Moumblow, Box 278D, East Northport, New York.

FREE Sample—Interesting informative. Illustrated! National Stamp News, Anderson, South Carolina.

50 DIFF. Finland 10c with approvals. Carroll's, E. 1817-C Sprague, Spokane, Washington.

NOTHING Free Only Good Stamps. Low Prices. Ekman, Box 578, San Carlos, Calif.

SPAIN 100 different 10c to approval applicants. Morell, 203 Fenimore Street, Brooklyn 25, New York.

SENSATIONAL U.S. Confederate States catalogue free. Stone, 45-S Bromfield, Boston 8, Mass.

UNITED States—40 different 10c; 40 different Commemoratives 25c. No approvals. Seidenberg, Appleton 944, Wisconsin.

ZOUNDS!! Exciting "Strange Countries," Savage and Exotic Lands packet—Free with approvals! Saxon, Vista, Calif.

500 WORLDWIDE mixture. Big variety 25c. Monjar, Fairmount, Cincinnati 14, Ohio.

100 DIFFERENT 10c, 1000-$1.00, 5000 Mounted $12.50. Ransom, 1333 Pontiac, Ann Arbor, Michigan.

20 DIFFERENT Belgium, Australian, Finland 21c each country. All 60c. Uhl, Lantana, Florida.

NEPAL—Grotesque collection of Nepal, remote Himalayan Country—Cataloging $2.20, just 10c to new approval applicants. Viking, 130-PPP Clinton St., Brooklyn, N.Y.

25 BRITISH colonies 10c, completely illustrated folders. Real bargains. Free sets to customers. Stoll Stamp Service, 2634 Burnett, Louisville 10, Kentucky.

FREE Packet with United States and Foreign Approvals. Hoyt, Hudson, N. H.

Copyrighted material

FREE! Big United States stamp catalog —including value guide and identified plus check list. Hundreds of illustrations. Approvals. Harrisco, Boston 17.B- Mass.

WONDERFUL Offer—7 complete Mint Sets Manchukuo etc. only 10c with approvals. Reich (S25), 1033 Lawrence, Chicago 40.

TEN dandy sets, 10c. Approvals. Faszold, 423a Cameron, St. Louis Co. 15, Mo.

LOCOMOTIVE—Airplane—Sports—many others. Free with approvals. Wirth, Norwichtown, Conn.

FREE sport stamp and story featuring Diagoras, olympic victor. P. Voker, 232a East 77th, New York 21.

U.S. 797 SPA sheet only 5c to U.S. approval applicants. D. Kelly, 235 86th Street, Brooklyn 9, New York.

GIANT Approvals. Thousands Different at 1 and 2c. Wahl's Stamp Exchange, 7008K Farragut Ave., Chicago 31, Ill.

100 DIFFERENT Spain 25c. Penny approvals included. Reed, Box 980, Chicago 90, Illinois.

MINT (Unused) United States approvals. Patrick Agencies, 3650B Central, Indianapolis 5, Indiana.

100 DIFFERENT U. S. 25c. Approvals. Buckeye, Box 53, Mansfield, Ohio.

APPROVALS ½c up from 33,000 collection. Chur, Box 245, Buffalo 12, New York.

½—1—2c APPROVALS. Bargains Galore! Cole, 43G Rinewalt, Buffalo 21, N. Y.

FREE Triangles. U. S. Price List. Philatelic House, Rockville Centre, New York.

SCARCE 75c Mongolia free to approval buyers. Lucas, Box 387S, Lombard, Ill.

150-DIFFERENT Stamps $.05 to approval applicants. Safford, 3104 Flesher St., Dayton 10, Ohio.

SUPERB Approvals. Stamps ⅓ to ⅛ catalog. P. G. Beals, 125 Tremont St., Boston, Mass.

START your own Stamp Business. Send for Free circular. Donald Shepard, Box 1147, Chicago.

"GOYA Nudes" 20c (Worth 55c) with approvals. German War Issues, cataloging $10.82, $2.50. Royal Stamp Company, Tamaqua 2, Penna.

PENNY Approvals by country. M. H. Hoerning, 102, Farmington, Ark.

50 DIFF. U.S.A. and 100 diff. foreign 10c approvals. Kem's, 670 W. Florence, Los Angeles 44, Calif.

PRIZE Contest! Everybody wins! 10c brings premium, approvals, entry blank. Seminole Stamps, Box 1138-S, Coral Gables, Florida.

TRIANGLES! Diamonds! Eleven scarce, unusual, bi-colors—10c with approvals! Thrifty Company, Silver Spring, Md.

ARMENIA, Hongkong, Siam, Ukrania, Mongolia, Free with Approvals. Choice Stampco, Box 2126, Miami 40, Florida.

250 STAMP hinges and 8 different Brazil free with approvals. Jaydee, 218 Dickinson S. W., Grand Rapids 7, Mich.

A Collector's Club . . . The Fleetwood First Day Cover Club has a growing membership across the Nation. Numerous Services and a Free cover of your choice, on joining. Send for full details. Fleetwood Cover Service, Pleasantville, New York.

"HOW To Recognize Rare Stamps." Free Book Illustrated! Kenmore, Milford H-58, New Hampshire.

EXTRA Special ½c approvals and better. Emil Auer, Buffalo 10, New York.

ILLUSTRATED catalog, hundreds Mixtures, Packets, Supplies—3c postage. Towerco, 1714 South Ashland, Chicago 8.

BETTER Grade U. S. or Foreign Approvals. Ocean Stamp Co., Box 64, Brooklyn 29, New York.

29 ANTIQUES, RELICS & INDIAN GOODS

ANTIQUE pistols, flintlocks, muskets, swords, list 25c coin or stamps. Westbrook, 5537 Lafaye Street, New Orleans, La.

6 PERFECT Indian Arrowheads $2.00. Stone Tomahawk $3.00, Peace Pipe $5.00. List free. Lear's, Glenwood, Arkansas.

30 MINERALS & PRECIOUS STONES

TEN N. Mex. Minerals $1.50; six fluorescents $1.00; Fools Gold $.25. Literature. Prospector, Winston 5, New Mexico.

GEMOLOGY Books! Catalog 10c. Atlantic Books, 2 Lawrence, Charlestown 29, Massachusetts.

GEMSTONES, Mineral specimens. Every variety. Lowest prices. Postcard brings free booklet. Plummer's, 4720 Point Loma Ave., San Diego 7, Calif.

ATOMIC Trinitite! Send 25c for actual radioactive atomic blast specimen and information on prospecting for tungsten, uranium, mercury with ultra-violet Mineralite. Dept PS4, Ultra-Violet Products, Inc., South Pasadena, California.

31 HOBBIES, COLLECTIONS

INVENTING can be an interesting and profitable hobby. Write for complete particulars. Institute of American Inventors, Dept. 30-E, 631-E St., N. W., Washington 6, D. C.

WANTED—Cigarette, tobacco cards. Write Charles Bray, East Bangor, Penna.

AUTHENTIC Army & Navy campaign ribbons, embroidered insignia patches & supplementary sleeve insignias. Fascinating hobby (a collector's item that will be scarce & valuable soon). 65 assorted plus free gift $1.00. Write PS-1579, 221 W. 41st Street, New York 36.

57 ASSORTED Military insignia, patches, etc. Only $1.00; fascinating hobby. Pritt Co., 14 West 27th St., New York City.

UNUSED matchbook covers—100 different $1.00—36 page Catalog 25c—Charles Edelman, 1311P East 84, Cleveland 3, O.

DIGNIFIED sideline—$100 mo. details 25c. Documents, 422 Washington Bldg., Washington, D. C.

LEATHERCRAFT appeals to every member of the family. Make your own leather belts, billfolds, purses, hats, dresses, blouses from durable low-priced leathers. Tools, designs, supplies available. Free catalog. Tandy Leather, Box 397-D, Tulsa, Oklahoma.

32 PHOTO FINISHING, PHOTOCOPIES, ETC.

PHOTOGRAPHY for pleasure or profit. Learn at home. Practical basic training. Long established school. Free booklet. American School of Photography, 835 Diversey Parkway, Dept. 1741, Chicago 14.

COLOR Prints from color transparencies. (5 for $1.00) size 2¼"x3¼". Valu-Color, Oakwood Station, Los Angeles, Calif.

OIL Coloring photographs. A fascinating hobby or profitable sideline for those with artistic talent. Learn at home. Easy simplified method. Free booklet. National Photo Coloring School, 835 Diversey Parkway, Dept. 1721, Chicago 14.

ENLARGEMENTS! Eight 5x7's or five 8x10's. $1.00. Wilart Enlargers, Box 967, Little Rock, Arkansas.

KOREAN veteran gives free film—Litwin, P. O. Box 1, Los Angeles 35, Calif.

TWO Prints each good negative. 8-exp. 35c; 12-exp. 50c; 16-exp. 65c; Reprints 4c. Mayfair Photo Service, Box 617-A, Toledo, Ohio.

ROLL Developed and 4x6 or 3¼x4½ oversize glossy Velox prints. 8 exposure 40c. 12 exposure 60c. 16 exposure 80c. Clemet Photo Service, 1318 West Columbia Avenue, Philadelphia 22, Pa.

SPECIAL Jan. and Feb. Offer: Send your favorite photo with $1, and twenty billfold size double weight pictures will be rushed back to you with your original photo. Order as many units of twenty from your pictures as desired. No limit. L. A. Eastman, Bode, Iowa.

FREE Mailers. 8 contacts 30c, jumbos—40c. 12—45c. Jumbos—55c, reprints—4c. Jumbos 5c. Western Photo PS14, Box 298, San Francisco 1, Calif.

NEW—16 oversize contact prints or 8 jumbos in album. 25c with this ad. Album Studios, Dept. S, Weatherford, Oklahoma.

ENLARGEMENTS 5x7 15c Cropping. Ace Photo, Box 512, Waterbury, Conn.

33 MOTION PICTURES, SLIDES SOUND EQUIPMENT

GUARANTEED Fresh 8mm roll, magazine; 16mm roll, magazine movie film. Color, b&w. Free catalog. Eso-S, 47th Holly, Kansas City 2, Missouri.

8-16MM. Silent-sound films. Complete rental library All latest subjects. Free catalogue, (sample film 10c). Garden Film, 317 West 50th, New York 19.

MOVIE Camera Film: 8mm roll $1.50. 16mm 100' $3.00. Free processing. Better Films, 742 New Lots, Brooklyn, N. Y.

FREE Giant catalog of 8mm & 16mm films for home movie enthusiasts. Films for every occasion. Lee Stann, Dept. PS2, 11 Willard Ave., Mt. Vernon, New York.

WILD Life Films. Exciting, dramatic action in the natural habitat of animals of forest and plain. 8mm or 16mm in beautiful color or B & W. Also 2"x2" color slides. Write for free illust. literature. Wild Life Films, 5151B Strohm Avenue, No. Hollywood, Calif.

TAPE Recorders, Tapes, Accessories. Unusual Values. Dressner, 624 East 20th Street, New York City 9.

RENT 16MM sound films 50c reel. Large selection; free catalog. U. C. Film Service, 128 Chestnut St., Roselle Park, N. J.

5,000 NEW-Used 8-16mm. Silent-Sound Films. International, 2120 Strauss, Brooklyn 12, New York.

EXCHANGE 16mm. sound films, also for sale. Bedner, 5300 So. Talman, Chicago.

SYNCHRONOUS magnetic recorder professional quality. Magnetic Recorders Co., 7120-A Melrose Ave., Los Angeles 46, Calif.

1953 ROSE Parade movies. Kodachrome. Colorful floats. Beautiful girls. 200 ft. 16 mm. $34.95. 100 ft. 8mm. $17.50. Calif. add tax. C.O.D.'s accepted. Avalon Daggett, 441 No. Orange Dr., Los Angeles 38, California.

BIGGEST Bargains At Blackhawk: Headquarters for used films—16mm. sound prints often available at $3.98 a reel; 16mm. silent, $2.98; 8mm., $1.98. Tremendous stock of used features, comedies, cartoons, sports, travels, musicals, 100' 16mm. used Panoram musicals, six for $4.99. Big savings on new 16mm.-8mm. subjects. Lowest prices on reels, cans, editors, splicers, supplies. Good used 16mm. sound projectors—Ambros, Bell & Howells, Victors—often available at $129.95. Whatever it is, Blackhawk almost always has the biggest selection at the lowest price. Get Blackhawk's big free monthly catalog. Blackhawk Films Inc., 1119 Eastin Bldg., Davenport, Iowa.

"ENTIRE Life Story Of Christ" 8mm. 16mm. Sound & Silent. Rent, Purchase. Hemenway Film, 31 W. Church St., Boston 16, Mass. State Projector.

16MM Sound Films. Bought, sold, exchanged. Waverly, 5707 So. Christiana, Chicago 29.

34 CAMERAS, PHOTO SUPPLIES

BASS Says: Trading cameras a national habit since 1910. Write to Bass the old "Horse Trader." A postcard will do. Simply say: "Bass, I have and I want . . . How much will you allow me?" Satisfaction guaranteed. Bass Camera Company, Dept. AG, 179 W. Madison St., Chicago 2.

GUARANTEED repairs at fair prices. Free estimates. Camera Repair Corporation of America, 225-C Broadway, New York 7.

PHOTOGRAPHY for pleasure or profit. Learn at home. Practical basic training. Long established school. Free booklet. American School of Photography, 835 Diversey Parkway, Dept. 1721, Chicago 14.

GE PR-1 memory meters, $20.55 . . . Weston Master 11's, $19.98. Factory boxed originals. Free Catalog. Dealer's Mart, Dept. S2, 11 Willard Ave., Mt. Vernon, N. Y.

WHOLESALE Photographic Supplies. Cameras, Films, Projectors, Enlargers. Write for Free Catalog. Capitol Photo Supplies, 2428 Guadalupe, Austin, Texas.

AMATEUR Photographers. Easy plan to turn your spare time into cash. $100.00 a week or more!! Send for Illustrated Brochure & Full Information, enclose 25c to cover postage and handling charges. Harrison Studios, 13561-C Ventura Blvd., Sherman Oaks, Calif.

35 MUSIC, INSTRUMENTS & SONG WRITERS

WANTED! Poems for musical settings. Write Songwriters' Service, Clifton, N. J.

POEMS Wanted to be set to music. Free examination. Send poems. McNeil, Master of Music, 510-PS, S. Alexandria, Los Angeles, California.

SONGPOEMS Wanted. Mail to: Tin Pan Alley, Inc., 1650 Broadway, New York 19, N. Y.

ELECTRIC Guitars, accordions, amplifiers. Wholesale. Free catalog. Carvin, Baldwin Park, Calif.

Copyrighted material

POEMS Wanted for musical setting. Send poems for free examination. Five Star Music Masters, 646 Beacon Bldg., Boston, Mass.

POEMS Wanted for musical setting on percentage basis. Free Broadcasts. Sooner Song Co., 22-PS North West 8th, Oklahoma City 2.

SONGWRITERS! Hold All Song Poems! Get Inside Facts First! Nationally known Songwriter's Booklet "Songwriting Secrets" tells All. Also list of Publishers, how to contact. All for $1.00. No C.O.D.'s. Free Rhyming Dictionary with each order. Melody House, Dept. PS, Box 19007, La-Tijera Sta., Los Angeles 43, Calif.

SONGWRITERS! Send poems, songs. Music Service, 243 West 72nd St., PS, New York 23.

SENSATIONAL Free Booklet, "How To Write and Sell Songs." Get the facts first. Poems examined Free. Reliable Music Service, Box 430-B, Hollywood 28, Calif.

POPULAR Songs. How to write and sell them. Write for free booklet Successful Songwriting. Gateway Songs, Box 2470, Hollywood 28, California.

YOUR Words—Our Music! Song Promotion Guild, 350P Broadway, New York 13.

1953 ACCORDIONS, World's finest at lowest prices anywhere! Trade-ins Taken. House of Accordions, Shelburne Falls, Mass.

36 RADIO, TELEVISION, SUPPLIES & EQUIPMENT

MAKE simple, tubeless, batteryless, distance-getting crystal radios. Crystal and illustrated instructions 25c postpaid. Allen, 427-S, Clinton, Mo.

RADIO Control model booklet with illustrated diagrams and list 18 builder's plans, 25c coin. Dittofax, 5208-B Onacrest, Los Angeles 43.

FREE 236 Page 1953 Television-Radio-Electronic Catalog! World's largest stocks, lowest prices. Complete supplies for builders, experimenters, amateurs, servicemen. Latest television, radios, phonos, recorders, sound equipment. Thousands of parts, tubes, test instruments, books, diagrams. Top quality money saving values. Get yours now! Allied Radio Corp., 833 W. Jackson Blvd., Dept. 31-B-3, Chicago 7, Illinois.

FREE Radio Tester, Tools, Soldering Iron. Build and keep 15 guaranteed high quality Radios—only $19.95 complete. No experience required. Enclose 25c for valuable Radio-TV Repair Guide and catalog. Progressive Electronics 497 Union Ave., Dept. 27, Brooklyn 11, New York.

BUILDER'S "Pictorial Construction Plans", Free List. Alena, Box 24, Astoria 6, New York.

BUILD sensational, inexpensive UTVM unit for your multimeter. Details $1.00. Air-O-Tronics, Box 31, Lancaster, Calif.

"CRYSTAL Radio Booster", Plans and crystal, 25c. Neher, 4308 Iroquoise, Long Beach 8, California.

BUILD Television Antennas, 82 channels, six types. Antenna Instructions $1.00. LP Engineering, Box 7824, Indianapolis, Indiana.

CRYSTAL Radio experimenters. Write Leslie Hulet, R. 4, Lakewood, New Jersey.

ELECTRONIC devices developed to your requirements. Free estimates. Registered Engineer, 5208-X Onacrest, Los Angeles 43.

STOP TV jitters! Amazing new IG Antenna Filter rejects airplane, auto ignition, oil burner, electric shaver, small motor interference. Easily installed. $2.98. Tele-Trends Co., Dept. 3S, P.O. Box 21, Forest Hills, New York.

37 BUSINESS OPPORTUNITIES

BIG Money and fun growing Live Miniature Ming Trees on your window sill. Write for Free rare tree seed and plan. National Nursery Gardens, 8463 South Van Ness, Inglewood 4, Calif.

GOOD Paying Business Silvering mirrors, plating autoparts, reflectors, bicycles, bathroom fixtures, etc., by late methods. No tanks or shop required, outfit furnished. Free Booklet. Gunmetal Co., Ave. E, Decatur, Illinois.

EXTRA Money—No Selling—operate vendors. Amazing profits, details Free. Silver King, Suite 221, 622 Diversey, Chicago 14.

OPERATE profitable mail order business. Write Walter Service, 4159-B East 112th, Cleveland 5, Ohio.

MAKE money addressing envelopes. Our instructions reveal how. Glen Glenway, 5713 Euclid, Cleveland 3, Ohio.

HOW and where to obtain Capital? Free details. Star Service, Wapakoneta, Ohio.

RECAST old batteries into new. Latest achievements. Battery Laboratories, Minneapolis.

MAKE $3.00 Hour At Home—I do—making sandals. George Youngs, 1308 South First, Arcadia, California.

ENVELOPES addressed accurately, reasonably. Fast Service. We have capable addressers in your city. Glenway System, 5713-X Euclid, Cleveland 3, Ohio.

IMPORT-Export! Opportunity, profitable, world-wide, mail-order business from home, without capital; or travel abroad. Established World Trader ships instructions for no-risk examination. Experience unnecessary. Free details. Mellinger 12, Los Angeles 24.

THRILLING Profitable Home Business. Make fast-seller chenille monkey trees dolls, flowers. Terrific holiday demand. Information free. Velva, Bohemia 17, N.Y.

MAKE Gifts, Novelties, Jewelry, from sea shells, fish scales, plastics! Wholesale, illustrated catalog 10c. Giftcrafts, Box 4550-PP Coral Gables, Florida.

MAKE $6.73 Every Time You sell one—and they're amazingly easy to sell! We have new Adding Machines in original factory cartons you can sell for only $14.95 and you make 45%. They're executive model portables, precision built with automatic clearance, direct subtraction, fully guaranteed. Send for life size color photo with full details. Write today to Lightning Adding Machine Co., Inc., Dept. PS-10, 1260 West Second Street, L. A. 26, Calif.

$25 WEEKLY Working two hours daily. No canvassing. No manufacturing. Lycke, Box 2471-B, Cleveland 12, Ohio.

MOLD Making Liquid Rubber; Sample pint, with instructions, $2.00 postpaid; Plastercraft Supply Company, 3051 St. Clair Avenue Cleveland 14, Ohio.

NEWEST Spare, Full-Time Business. $5 to $10 hour possible. Paint with Suede—the finish with touch And eye-appeal. Beautify auto dashboards, signs, radios, toys, figurines, lamps—100, 1 others. Complete. Step-By-Step Instructions sent for no-risk examination. Free details. Coast, 1004-AH, So. Los Angeles St., Los Angeles 15.

BOOKKEEPERS — Operate profitable "No-Ledger" bookkeeping service. Write Frye, Box 432, Chester, South Carolina.

BOOKKEEPERS, increase earnings operating sensational bookkeeping service. C.P.A. system. Kern, 4942-B Vineland, North Hollywood, Calif.

SELL books by mail! Wholesale catalog, 25c. Monarch, Auburn, New York.

ANNOUNCING home study course in commercial baking. Practical basic training. Good field for those with aptitude. Free booklet Opportunities in the Baking Industry". National Baking School, 835 Diversey Parkway, Dept. 1721, Chicago 14.

MAKE Money At Home as renewal headquarters for all magazines. Liberal commissions. No experience—no capital needed. Supplies furnished. Write for Free Catalog. McGregor Magazine Agency, Dept. 510B, Mount Morris, Illinois.

NEW $$$$$ Fabulous Home-Business "Jewelize" Finish. Free Sample. Free $$$$$ Plan. Pearl-Art, 7216-B Bear, Bell, Cal.

START Venetian Blind Laundry. Profitable lifetime business. New Machine. Free Booklet. F.D. Co., 442 N. Seneca, Wichita 12, Kansas.

VENDING Machines—No selling. Operate a route of coin machines and earn amazing profits. 32-page Catalog Free! Parkway Machine Corporation, Dept. 73, 715 Ensor St., Baltimore 2, Maryland.

MAKE Money spare or full time, casting Metal Toys and Novelties. Big wholesale and chain store demand for Autos, Soldiers, Ashtrays, Banks, etc. keeps manufacturers busy. Production moulds furnished for up to 100 and more castings per hour. No experience or special place necessary. Write for information and illustrations of patterns needed. Metal Cast Products Co., Dept. E, 1696 Boston Road, New York 60, N. Y.

LEARN metalizing baby shoes, jewelry, gifts, Bronze, gold, silver. Complete success plan free. Kiktavi Building, 7217-PS South Broadway, Los Angeles 3.

POPCORN and Potato Chip equipment. Long Eakins Company, 5363 High, Springfield 99, Ohio.

137 PLANS for starting home business. Details: Elite Co., 220-A Grand St., New York 13.

SELL by mail; free details; instructive booklet 25c. Manhattan House, Box 51-L, St. Albans 12, New York.

EARN Money With Typewriter—Sewing Machine! Spare Time! Details free. Edwards, 3915-PS 12th, Des Moines 13, Iowa.

FREE Vending Machines; if used to sell our profitable nuts. Continental, Box 1361-B, Milwaukee 1, Wisconsin.

LIQUID Rubber, make flexible molds. Free Sample. Chaney, 1130 E. 16th St., Jacksonville 6, Fla.

CONVERT hand mowers to power mowers. Do it now, this winter. Sell the Handy-Dandy conversion kits. Easily installed on 16 to 20" mower. Use any small gasoline or electric motor. Quick delivery. Kits purchased with or without engines. Also new garden cultivator. Cultivates 3" deep. Attachments available: weed cutter, lawn mower, snow plow, and rotary snow brush. Discount to dealers. LeClaire Manufacturing Company, LeClaire, Dept. PS, Iowa.

START A Buying Service, buy wholesale thousands nationally advertised products. Make big profits selling at sizeable discounts. Postcard brings details. American Buyers, 627-S Linden, Buffalo, N. Y.

BUY Wholesale—Thousands nationally advertised items. Save—Make Money! Free details. Durex Co., Box 672-K, Chicago, Illinois.

EXCLUSIVE franchised distributors. Cedar closets made with genuine redwood cedar compound, treated with DDT. Prevents moth damage. Just brush on. Low cost, attractively packaged volume product with tremendous profit and repeat potential. Hardware, paint, department stores, building supply dealers buy quantities. Plaster, paint, and building contractors bulk volume outlets for spraying closets, attics and playrooms in housing developments, hotels, apartment houses. Liberal promotional allowance for newspaper advertising and store demonstrations. Investment for merchandise only. Write for samples, literature, full details. Cedarco, 90-AA Summit, Brookline, Mass.

"MAKE Profitable Products"—Formula Catalogue Free. "Imsco," 6347-PS-2 Parnell, Chicago 21, Illinois.

NEW—Big Mail Order Seller To Women. Particulars Free. Liebig Industries, Beaver Dam 2, Wisconsin.

MONEY, making ink, mucilage, your home; formulas, dollar. Frank Saville, Park Ridge, Illinois.

BUY Wholesale 740,000 Items. Details Free. Cottage Industries, Omaha 12, Neb.

DRUG Sundries. Fresh stock. Sell to drug stores, physicians and jobbers. Free distributors price list. Sanitary Sales Co., Box 934, Rockford, Illinois.

BOOKKEEPERS! Big Earnings. Operate Bookkeeping-Income Tax Service. Latest Amazingly Simplified Plans, $2.00. Tackett's, North High, Salem 4, Indiana.

25%-50% COMMISSIONS taking magazine subscriptions. Details, Courier, 40-69H 97th Street, Corona 68, New York.

EARN Money from newspaper clippings, snapshots, unusual items. Soltz, Box 303, Silverton, Oregon.

FULL or sparetime brings 40% profit. Details Free on request. No obligation. P.R.G. Products, 1533 Toul Avenue, Toledo 5, Ohio

YOU For President Of Your Own Credit-Collection Agency. Many who answered our ads now have their names on office doors. Franklin Credit, Roanoke 7, Va.

WANTED! Home Producers! By Manufacturers in our Clearing House Service. Become a sub-contractor, casting plastic products for these companies. Thousands of easy-to-make items required for consumer and industrial use. Cash in at home, without previous experience. Write Plastic Service Associates, Dept. PS2, East Boston 28, Mass.

YOUR Own Mail Order Business Free!! 3c stamp brings details. "WMS" PS, 17 William, Hillsdale, New Jersey.

$5 HOUR! Start Invisible Re-weaving at home. Free particulars. Law, 54-R East 99th, New York 29.

Copyrighted material

NATURAL Molding Latex. Extra thick. Free sample. W. Wooley, 115B Donald, Peoria, Illinois.

BOOKKEEPERS—Earn up to $520 month serving small firms part or full time. Proved Plans; Simplified System. Particulars free. Tax Saver System, Dept. PS, Fort Worth 2, Texas.

EARN $15,000-$30,000 annually. Franchise protected. Guaranteed minimum $12,500 or money back. Live at home. No merchandise to buy. Self-employed. One of most exclusive and noncompetitive businesses in United States and Canada. Send 50c for explanatory book. Money refunded when book returned. Harrell & Company, Box A-2, Louisville, Illinois.

LEARN Sewing Machine "Big Money" Business. Repair, electrify, rent, trade, sell, spare time. New machines, motors, small parts, wholesale. Facts free. Taylor Service, Hamilton PS-2, Ohio.

MAKE Rubber Stamps, repair dolls, learn invisible reweaving. Molding Latex. New Low Prices. Catalogue of "40 Ideas". Universal, Box 1076-B, Peoria, Illinois.

SILK Screen Printing. Make. Sell 100 Specialties. Inexpensive Course teaches everything. Typecrafters, 510-E West Susquehanna, Philadelphia 22, Pa.

ENRICH Yourself By Helping Others! Profit doubly: extraordinary income—rewarding happiness! "Friendly Endeavors" reveals 88 sparetime ways! Spectacular! Write: Simon, Box 87-PS1, Pelham 65, N. Y.

DO Easy Addressing—Mailing work at home. Get cash orders daily. Details free. Maxted Book Agency, Western Springs, 10PS, Illinois.

TO $35.00 Weekly. Spare Time. Home Operated Mailorder Business. Successful "Beginner's" Plan. Everything supplied. Lynn, 10420-C National, Los Angeles 34, California.

EARN Extra Money weekly mailing circulars for advertisers. Complete instructions—25c. Siwaslian, 4317-B Gleane Street, Elmhurst 73, New York.

PROFITABLE Home business, electroplating novelties, giftwares, autoparts, mirrors. Easy inexpensive home processes. Free booklet Tyco Metals, Box 13231-CM, Houston 19, Texas.

MAKE Perfumes At Home. Write, "Carey Laboratories," 1914 Chouteau PS-2, St. Louis 3, Missouri.

SMALL investment in Artkote molds, puts you in $5.00 hour stone facing business. Sample mold $2.00. Dividend Company, Liverpool, New York.

FIX typewriters. Free booklet describes our modern, inexpensive home-study course. Factory methods taught. Write Typewriter, Building 4, Tarentum, Penna.

START Your Own Profitable Mailorder Business! We Supply Everything! Write Today! Studio Products, Box 564-D, Glendale 5, Calif.

NEW Exceptionally profitable plans, ideas for home operated mail business. Rush name. Miller, 1772-R Carlyon Road, East Cleveland 12, Ohio.

MONEY in new greaseless doughnuts. Start in kitchen. No smoke. Sell stores. Free recipes. S. Ray Co., 3605 South 15 Ave., Minneapolis 7, Minn.

BUY Wholesale. Save 20% to 50% on nationally advertised merchandise. Free details. J. F. Clapp, Tuscola 2, Illinois.

"INCOME" from local information. No Selling. Write Neherco, LaVerne 6, Calif.

FINANCIAL Independence is yours. Learn how to run a successful mail order business. Big profits. Some have made fortunes. Details Free. Write today. Opportunities Unlimited, Box 1575, Boston, Mass. Dept. 3.

GET Big Mails Galore: Latest Money-Making Offers. Opportunities, Catalogues, Magazines, Samples, etc., etc., By listing your name in our Directory. 6 Issues $1.00. 12 Issues $2.00. Results Guaranteed. John Rodakowski, P.O. Box 9, Springfield, Ore.

PUBLIC Stenography; dignified, lucrative business. Operating details $1.00. Steno, Box 41, Greenbelt, Maryland.

START home mailorder business—Details—Gedgard, Box 798-A, New York 1, New York.

HOME Mail Business! We supply exclusive product - Advertising - Everything. Experience unnecessary. Start low as $150. Terrific Potentialities. Write: NMD, Agency, Box 88-C, Dorchester 22, Mass.

MAKE flexible molds! Cast plaques, bookends, figurines! Free sample! H. Tooker, 630-A Chestnut, Hamilton, Ohio.

SPECIALIZED Magazines covering your field of interest help You to greater success. Get latest copies through our Easy-to-Get-Acquainted Service. Hundreds of business, trade, professional, educational, sport, hobby, fashion, fertilizer, florist, food, foreign trade, forestry fruit, funeral directors and others covering all interests. Send for list today. It's Free. Commercial Engraving Publishing Company, 34S North Ritter, Indianapolis 19, Ind.

$250 WEEK reported! Free book "505 Odd, Successful Businesses." Work home! Expect something Odd! Pacific-36C, Oceanside, California.

ADVERTISING book matches—Cash in on big demand—sell Union Label matches. Cuts for all businesses and political parties—Free powerhouse selling kit—low prices—protection guaranteed on repeat orders—Cash commissions. Superior Match Co., Dept. PX-253, 7530 Greenwood, Chicago.

FREE Booklet reveals amazing secrets behind 301 new profitable enterprises! Many mailorder! Includes confidential instructions for starting wholesale buying service. Deumant Publications, 79-T Deumant, Kenmore 23, New York.

"MAKE Perfume" Catalogue Free—"International," 6347 Parnell-PS-2, Chicago 21, Illinois.

EXPERIENCED Roof Repairer Franchise Protection. Luster-Kote, 19417 Derby, Detroit, Michigan.

TIN-Cans. Turn them into cash. Nine methods. Instructions 50c. Charles Company, 12-EAP, Norwood, Ohio.

MINIATURE Trees. Why pay $5.00 for rare growing secrets? Free details. Bassett, 5038 N. Winthrop, Chicago 40.

OPERATE Profitable mailorder business. Particulars free. George Lenhoff, Lincoln 1, Nebraska.

$46 FROM Square Foot Plywood: Jigsaw necessary. Write: Woodart, Bridgewater, Mass.

GET Dollar Orders In Your Mail—keep 90c. Everything supplied. Genmerco, Box 142-C, Dorchester 24, Mass.

COLORGLAZED Concrete Pottery made without molds. Patented method. Cemetery products, novelties, tiles. Basement leak-sealing. Money-making projects. Booklet, details free. Men only. National Potteries, Grand Rapids, "Minnesota."

MEN-Women—"Everybody Likes Candy." Learn to make professionally at home. Tools and supplies. (Our 42nd year.) Ragsdale Candies, East Orange, N. J.

HOME Business opportunity mailing literature to new mothers. Everything furnished. Big Earnings. Orders Filled. Delray, Box 3852S, Columbus 13, Ohio.

START Business without Capital! Reliance, 15-B Park Row, New York 38, N. Y.

OWN, Operate, Route—"Wishing Wells." Place these New $7.50 Skill Games on counters in Cafes, Clubs, Luncheonettes, etc.—collect coins weekly. Details Free! "Legalcheres," Box 929, Long Beach 1, California.

MAKE Money At Home—mailing cards-circulars. Everything furnished. Paton, Box 55-D, New York 23, New York.

COUNTY Agency. Power mowers. Jobber discounts. Prepaid. Franchise deal. Rotacut-52, Excelsior Springs, Mo.

FREE catalog, samples—Printed stationery, business cards, labels. Dealers wanted. Sutton Printing, Box 853-S, Waycross, Georgia.

BUY it wholesale. Manufacturers. Distributors. Over 850,000 items. Literature free. Olsen, 1231-B East Third St., Duluth 5, Minnesota.

WHY job Worry? Start Electroplating, Metal Finishing Business. Free Information, trade secrets. Plater S. Hyde, 327 West 120th Street, Los Angeles 61, Calif.

300 MAIL Selling Opportunities. 10c (Refundable). Lewis Bartlet, Richland, Ga.

BIG MONEY! Start your own Plastic Business at home. Spare or full time. Free information. Write: Bing Products, PS-253, Watertown 72, Mass.

HUGE Profits in manufacturing and repairing luggage and cases at home. Free information. Abarsi Casecraft, 805-S Sunset Blvd., Los Angeles 12, Calif.

$15.00 THOUSAND, highest prices addressing envelopes at home—longhand, typewriter. Torrey, A-8, Melrose 76, Mass.

HOMEWORK—easy—profitable. Rush name. Siegel, Box 183-PS, New York 2.

$80-$110 WEEK; at home. Interesting work for a medical supply company. During depressions or good times, our work always in demand. Details $1.00—Refundable. P.O. Box 143, Madison, Ohio.

38 MONEYMAKING OPPORTUNITIES

21 POPCORN, Candy Apple Formulas, proven money-makers. Send $1 today for formulas, catalog of money-making ideas. Concession Supply, 3916 Secor, Toledo, O.

BE Appointed State Notary Public Now! Details; Stationers, Helotes, Texas.

DETECTIVES Earn Big Money. Experience unnecessary. Detective Particulars free. Wagoner, P-125 West 86th, N. Y. 24.

SCHOOL Seniors—Earn sensational profits selling classmates America's Most Beautiful Graduation Name Cards. Largest selection. Outsells all others. Free sample kit. Printcraft, Dept. P, 1509 Maple Street, Scranton 5, Pa.

$10,800 PROFITS! Your own Mailorder Business! No Capital Risk! "Success Plan" (worth $2) Free! Write today! Treasury, 149 Storer, New Rochelle PS-8, New York.

SELL Titania gems; $9.75 carat wholesale. More brilliant than Diamonds. Free catalogue. Diamonite, 1404-S Mitchell, Oakland 1, Calif.

EXTRA Income! Sell Mexican Curios! No stock investment! Drop shipment deal! Details 10c. Filmer, 910-P Marion, Pharr, Texas.

SPARETIME Profits Taking Subscriptions, All Magazines. Wholesale Catalog Free. Cassell Agency, Westfield 1, N. J.

MAKE Money addressing Envelopes! Our information reveals how. Only 30c. Business, Dept. 45-B, P. O. Box 2224, St. Louis, Mo.

NEW Plastic Mending Tape. Just press on! Repairs clothing instantly. Lightning seller. Samples sent on trial. Kristee 177, Akron, Ohio.

NEW 7"x11" Signs—7c, sell 50c. 15 samples, $1.00. Lowy, 812 Broadway, Dept. 713, New York 3.

START A Buying Service, buy wholesale thousands nationally advertised products. Make big profits selling at sizeable discounts. Postcard brings details. American Buyers, 631-S Linden, Buffalo, N. Y.

GENUINE copper birthday cards. 50c seller. 6 assorted $1.00 sample 25c. L. Moran, 38-44 Waverly Ave., Seaford, Long Island, New York.

NEED Extra Cash?—Get it selling Blair's unusual line of household and food products. Every housewife a prospect. Send for samples Free. Write Blair, Dept. 55LB-1, Lynchburg, Va.

FREE literature describing money making plans. Hugh Zentz, Elkhart, Indiana.

MANUFACTURE Rhinestone and Pearl Jewelry at home. Latest creations, tremendous profits, no skill needed. Postcard brings illustrated catalog of settings, stones, etc. A. V. Cutt Co., Inc., 210-H Fifth Ave., New York 10, New York.

PROFITABLE Hobby—Clipping Magazines! Information 3c. Croom, 403 Colley, Norfolk, Virginia.

$35 WEEKLY addressing envelopes. Instructions $1, refundable. Adservice, Spring Valley 36, New York.

WIN Cash, Cars in Prize Contests. Send 30c for winning hints, tips. Digest, Dept. 20-B, P. O. Box 2266, St. Louis 9, Mo.

WANTED: Typewriter owners. Make handsome profits. Write today. Groves Company, 682 Hastings 3, Nebraska.

LEARN Watch-Clock Repairing at Home. While learning we fix your watches—clocks—Special Bonus Offer—Inquire Modern Technical Supply, 55-PS West 42nd Street, New York 36.

EARN Money Evenings, copying and duplicating comic cartoons for advertisers. Adservice, Argyle 2, Wisconsin.

WIN contest money. General Contest Bulletin gives hundreds of tips. Lists current contests and rules. Sample 25c. General Contests, 1609-A East 5th, Duluth, Minnesota.

Copyrighted material

LIVE Better—Live Happier—Find security. Profit In The Country. Interesting facts Free. Hermes Publishers. 152-D West 42nd Street. New York.

EARN While You Learn Make Your Mirrors—Silvered Glass ornaments. Bottles. etc. Big profits—Good Hobby—Detailed illustrated course includes Trade Formulas—Only $1.50. Illustrated Co., 176 San Fernando Rd., Los Angeles. Calif.

MAKE to $4.50 hour doing common pen lettering. National Artists. 801 North Marsalis. C-5. Dallas 3. Texas.

SPARE-Time Investigators! Eight big money-makers. Everything complete. $5. Jasper. PS-1. Box 17. Monroe. Louisiana.

EARN money. spare time. Free Particulars. Chamberlin. Box 894. Manchester. New Hampshire.

FREE Book "505 Odd Successful Businesses." Work Home! Expect something Odd! Pacific-35C. Oceanside. Calif.

FREE Booklet reveals amazing secrets behind 301 new profitable enterprises! Many mailorder! Includes confidential instructions for starting wholesale buying service. Deumant Publications. 83-T Deumant. Kenmore 23. New York.

MAIL Order Business. Giftware—Home Products. Free advertising method. Unlimited opportunity. Write H. G. Seidel. 7070 Hollywood Blvd.. Hollywood 28. Calif.

PROSPERITY in 1953 details 25c. John Earhart. RFD 5 Lancaster. Penna.

A $100-A-Month hobby at home! No soliciting. no mail order. no meeting people. Easy enjoyable pastime. Details. 25c (Refundable). Laura Dickson. 401 Montague St.. Anderson. South Carolina.

MAKE Money and rid living room of scattered newspapers. Send 50 cents for plan W-521. Watson's Canton. New York.

$$$ IN Personalized Baby Record Books. Sell By Mail Use Same Literature We Do. No-Co-Ro. Oakland 6-P. Calif.

JUNK Pays Big money—Know How. Where. Get. Buy. Sell Scrap. Send $2.00. Aztec Supply. Rock Island. Illinois.

39 FORMULAS, PLANS, ETC.

FORMULAS—All kinds. Latest products. Literature free. Kemico. Park Ridge 15. Ill.

GET $1.00-$2.00 Orders By Mail—Keep every cent. Everything furnished. Write Alliance Sales. 568-A. Alliance. Nebraska.

FOR the best in modern manufacturing formulas. get my literature! Established 1897. Liscombe Miller. Tampa. Florida.

FREE Formula Catalog. Anything analyzed $35.00. Western Chemical. Salem. Ore.

CHEMICAL Formulary—9 volume authority! Thousands commercial manufacturing formulae. $7.50 any volume. $63.00 complete! Also. book 10.000 formulas. $3.98. Literature. Paullin. 109SB. Loudonville. Ohio.

LABORATORY tested formulas. Lists Free. Pont. Box 635-PS. Terre Haute. Ind.

ANY Formula $3.00. Chemical Instruction Sheet—catalog 10c. J. Belfort. 216 W. Jackson. Chicago 6.

40 PLASTICS

PLASTICS home-craft course for Men and Women. Tells and shows how to make hundreds of fast selling plastics products. All plastics and materials for 23 projects included in course. No special tools needed. Course pays for itself. Write for Free booklet. Interstate Training Service. Dept. D-2B. Portland 13. Oregon.

PLASTIC Sheets. Rods. Tubes. etc. Free List. Plastic Supply Co.. 2901 N. Grand Blvd.. St. Louis 7. Mo.

MAKE Plastics. Simple instructions. formulas. $1.00. Materials readily available. Lab. Box 232. A. St.. Cashmere. Wash.

LEARN Plastics at home. Small cost—Spare time. Dime brings sample plastic. three experiments. full details. Plastic Projects. Box 5151. Detroit 35. Mich.

FREE List—Jewelry findings. lucites. plexiglas. internal carving drills. dyes. supplies. pens. emblems. medallions. insignia. chain. ear wires; many others. Caraday. Box 71. Ryder Station. Brooklyn 34. New York.

NEW liquid casting plastic. Clear. colors. Embed flowers. insects. coins. Saw. drill. carve. Send 25c for Castolite Creations Manual and proved Success Plan showing how to make money at home. Castolite. Dept. B-102. Woodstock. Illinois.

LUCITE. Plexiglas. Any size sheets masked Square foot (12 x 12) cost 1/16" $1.20; 1/8" $1.40; 3/16" $1.75; 1/4" $2.08. Include 10% postage. Almac Plastics. 600 Broadway. N. Y. C.

PLASTIC sealing photos. cards. wallet size 25c. Sample Free. 620-A St. Ann's. New York 55.

PLASTICS. Lucite. Plexiglas. Acetates. Polyester-Fiberglas. Compare our retail-wholesale prices. Be sure you get our new value-packed. bargain-filled catalog—10c. Airmailed—35c. Gem-O'-Lite. Box 6861Z. North Hollywood. California.

NEW Engraving. Carving Attachment for hand motor tools. Details. plastic sample 25c. Profits unlimited carving plastics. Desco Distr's.. 6334-H Sepulveda. Van Nuys. Calif.

41 CHEMICALS & APPARATUS

LABORATORY Apparatus. Chemicals. Microscopes. Complete Chemistry Sets. Minerals. Uranium Ore. 10c brings catalog. Porter Chemical Company. Hagerstown 2. Maryland.

NEW Idea Chemical and Apparatus Outfits for Home Experimenting Photo-Scales. Microscopes. Chemicals. Biological and Laboratory. Supplies in Small Quantities. Catalog 25c. Established 1931. John H. Winn. 124-B West 23rd Street. New York. N.Y.

LUMINOUS Paints will glow in dark. Six colors. Fairmount Chemical Co.. 136 Liberty St.. New York City 6.

SPECTROSCOPE for quick chemical analysis $3.00. Cutting Sons. Los Altos. Calif.

NEW Chemical Supply Catalog. 15c. refundable. Laboratory Sales. Box 161-B. Brighton. Mass.

ILLUSTRATED Catalog: Chemistry. mineralogy. biology. 10c. Tracey Laboratories. Evanston. Illinois.

CHEMICALS and apparatus for industrial. analytical. and private laboratories. Catalog 20c. Dept. M-26. Biological Supply Co.. 1176 Mt. Hope Ave.. Rochester 20. N. Y.

SECOND Printing. Improved version. spectacular chemical fireworks experiments manual. Contains complete setups. formulas. instructions on thermits. fulminates. powders. Still $1.00 postpaid. Chemi-Technix Laboratories. 568RP Riley. Buffalo 8. New York.

42 HELP WANTED

FOREIGN & Latin American Employment 1953 "Foreign Service Directory" gives Up-To-Minute Facts on Military & Civilian Construction. Government Jobs. Major Oil Listings. Aviation. Transportation. Steamship Lines. Mining. Importers. Exporters. How-When-Where to apply. application forms. Hot List Firms Hiring. $1.00 postpaid. Global Reports. Box 883-S. Hollywood 28. Calif.

CONSTRUCTION Job List. Published Monthly. $1.00. Dempster's Construction Scout News. Dept. 268-DY. Bridgeport. Ill.

WANT To Make More Money? Have a real career with a lifetime of high salaries? I'll show you how to succeed in the growing automotive-diesel field. Write Ed Howes. Chief. Dept. 523. 4000 S. Figueroa St.. Los Angeles 37. No obligation.

HONOLULU Help Wanted columns airmailed $1.00. Pomeroy's. #3 Campbell Block. Honolulu. Hawaii.

THOUSANDS will soon be hired for work in Greenland. Truck drivers. carpenters and plumbers over $1400 per month. Complete foreign-domestic listings $1.00. Construction Workers Service. 1111 Commerce Bldg.. St. Paul. Minn.

$1.000.000 FOREIGN & Domestic Construction Projects published Monthly. gives Contractor & Locale. How-When-Where to apply with application form. $1.00 postpaid. Global Reports. Box 883-PX. Hollywood 28. Calif.

ALASKA!! Last American Frontier. $1.00 brings 1953 Business Directory & Government Map. Military & Civilian Construction; Homestead & Highway facts; Mining. Aviation. Fur Farming. Grazing. Timber. Travel directions. List of firms hiring. How to apply. Alaska Opportunist. Box 92 Hollywood 28. Calif.

FOREIGN Jobs. Contracts underway and soon starting in Africa. South America. Canada. England. Europe. South Pacific. Middle East. Mexico and Alaska. Send $1.00 for foreign job news. information. application forms. etc. DCS Foreign Job News. Dept. 268-DZ. Bridgeport. Ill.

JOIN The Merchant Marine. Excellent Pay. Foreign Traveling. Free Details. Davenport's. 1170-B4 Broadway. New York 1.

FOREIGN Employment Construction men. building trades. helpers. office men. others. interested in Foreign Projects. High wages. quarters. transportation. Send $1 for Foreign Construction Compendium and Application Forms. Foreign Service Bureau. Dept. PS-2. Metuchen. New Jersey. (Not an employment Agency—no fees.)

CALIFORNIA offers America's highest pay. best opportunities. Over 30 pages information compiled by reliable firm: industries. jobs. wages. housing. lands available. opportunities. Investigate your future in fastest-growing State! Send $2.00 to: Pacific Industrial Associates. Dept. G-2. Box 832. Santa Barbara. California.

NORTH Atlantic airbase job hiring hundreds monthly. Laborers earn $1100 per month. skilled $1450. superintendents to $2250. Folio $1. Jobservice. Box 30. Billings. Montana.

OVERSEAS Jobs. Big pay. transportation. expenses. Clerical. professional. mechanical workers. Most all trades. Latest listings airline. construction. manufacturing. oil. steamship companies. government agencies. many other opportunities. Up to date information on securing employment. contracts. income tax. applications forms. $1.00. Overseas Jobs. Box 335-B6. Baton Rouge. La.

CANADA's boom creates jobs. send $1.00 for "Construction & Oil Worker's Monthly Bulletin" listing Construction projects & oil Drilling Contractors. National Surveys. Box 402. Vancouver. B.C.. Canada.

43 AGENTS WANTED

NEW Jobs open in selling! Send name. address for five free issues of Opportunity Magazine's money-making guide. listing hundreds of companies who'll pay you well. full or part-time. No experience needed. Opportunity. 28 E. Jackson. Dept. 18. Chicago 4. Illinois.

START Your Own Business on credit. Your own boss. 1586 of our Dealers sold $5.000 to $27.500 in 1951. We supply stocks. equipment on credit. 200 home necessities. Sales experience unnecessary. Pleasant. profitable business backed by world-wide industry. Write Rawleighs. Dept. B-U-PSC. Freeport. Ill

BIG profits selling ties ($2.00 values) $6.50 dozen. Free catalog. Empire Cravats. 648A Broadway. New York 12.

GOLD Lacquered and silver sign letters. Windows. doors. trucks. Standard Sizes. Penny and up. Samples. Atlas-G. 544 West 79th. Chicago 20.

AGENTS—300% profit selling genuine gold window letters; stores and offices. Free samples. Metallic Sign Letter Co.. 431-E North Clark. Chicago.

FREE Book where to buy 800.000 articles from manufacturers at Wholesale Prices. Save up to 50% on Nationally Advertised Merchandise. Rush name for Free copy. Glass Pub. Co.. Ellwood City 1. Penna.

BUY Wholesale—25.000 items—Catalog 25c. Matthews. 1472-A5 Broadway. New York City 36.

PRINTING — Salesbooks — Envelopes. Free Illustrated Catalog—Ersco. Dept. PS. Bronx 72. New York.

ABSOLUTELY Free—Sales Kit. Sell personal initialed buckles with belts. cap badges. tie clasps. etc. Choose from 3000 emblems. Hook-Fast. Box 1425PS. Providence. R. I.

NEED extra money? Show your friends Wonderful Regal line of All-Occasion Greeting Cards. Over 100 beautiful assortments to choose from. Also Exclusive Stationery unobtainable elsewhere. No experience necessary. Your profit up to 100% plus bonus. Write for free samples. Sales kit on approval. Regal Greeting Card Co.. Dept. 79. Ferndale. Michigan.

BOYS or Girls. Men or Women: Earn large cash commissions. or valuable merchandise selling Garden Spot Seeds. Send No Money. just name and address. receive 50 packets of seed to sell at 10c packet. and Free 24 page Catalog. Lancaster County Seed Company. Dept. 413. Paradise. Penna.

BE A Money Maker . . . Use your home as magazine headquarters. Liberal commissions. No experience—No capital needed. Everything furnished. Write for Free Catalog. McGregor Magazine Agency. Dept. 510A. Mount Morris. Illinois.

Copyrighted material

MAKE Money Introducing World's cutest children's dresses. Big selection adorable styles. Low prices. Complete display free. Rush name. Harford, Dept. J-3341, Cincinnati 25, Ohio.

JUST Out! New Thrilling sensation in Everyday Cards. Rich foils, satins, velours sell on sight, 21 for $1. Make up to 100% profit. 50 Assortments. Imprint Stationery and Book Matches. Gift Items. Three $1 assortments on approval. Imprints Free! Joy Greetings, 507 N. Cardinal, Dept. 61-G, St. Louis, Mo.

SELL Miracle Orlon Embroidered Work Uniforms: Looks, feels, tailors like wool; wears 3 times longer. Outwears cotton 5 to 1. Acid-proof, grease-resistant. Washes perfectly pressed. Amazing profits. Outfit Free. Topps, Dept. 542, Rochester, Ind.

ABSOLUTELY Free, yours for the asking. Send postcard today requesting free sales kit showing complete new line, belt buckles with your name or personal initials, cap badges, 3000 different emblems also uniforms, caps, shirts, ties, wallets, etc. Write Hook-Fast Company, Box 480PS, Roanoke, Virginia.

AT Last! Something New and Sensational in Everyday Cards, 21 for $1. Make Extra Money Fast! Show Satin, Velour, Metallic Cards. Get orders easy. Big line $1 Assortments. Scented Stationery. Personal Matches Kiddie Books. Imprints Free. Three $1 boxes On Approval. Puro Co., 2801 Locust, Dept. 341-B, St. Louis 3, Mo.

$200 WEEKLY. New invention. Amazing 4-second Presto Emergency tire chains, fit all modern auto wheels. National advertising building big demand. 3 sales daily to oil stations, dealers, etc., make $200 or more weekly. Territory going fast. Write Presto Chain Co., P-16, Des Moines 2, Iowa.

LADIES! Need clothes and money? Easy to take dress orders. Big commissions in advance. Beautiful Style Presentation Absolutely Free! Send no money. Melville Co., Dept. 7929, Cincinnati 25, Ohio.

ANYONE Can Sell Hoover DuPont Nylon Uniforms for beauty shops, waitresses, doctors, nurses, others. In white and colors. Exclusive styles. Top quality. Low priced. Exceptional income. Real future. Equipment free. Write fully. Hoover, Dept. J-101, New York 11, New York.

MAKE Money with fast-selling Bostonian Shirts. Blouses too. Spare time, full time. Sales Kit Free. Bostonian, 89 Bickford, Dept. U-11, Boston 30, Mass.

BONUS Suit Plus Big Profits! Sell made-to-measure men's clothes. Fit satisfaction guaranteed. Big values sell fast. Profits to $11.50 per suit. Sample Outfit Free! O. K. Tailoring, 325 S. Market, Dept. 169, Chicago, Illinois.

EXTRA Money showing home decal decorations. Exciting beauty, color, new personality for every room. Free Samples plus two complete assortments on approval. Write Decal-Art, 344 Lorel Ave., Dept. B-107, Chicago 44.

FAST sellers. Big demand. Catalog. Parker Drug Co., Hoboken 6, New Jersey.

AMAZING discovery. Master Glaze puts brilliant glass-like surface on cars. Free sample information. Big commissions. Master Glaze, Dept. 763, 7720 Harwood, Milwaukee, Wisconsin.

CALENDARS, Advertising Novelties, Matches. All styles, including Religious. Varnished. 12 sheet, Girls. Hundreds of Advertising Novelties. Book Matches, etc. Fleming Calendar Co., Promotional Division, 6539 Cottage Grove, Chicago 37, Ill.

$1 STARTS you in business. Sell fine $1 ties. $1.50 and up values only $7.20 dozen, you make $4.80. Send only $1 for 2 sample ties. Catalog free. Philip's Neckwear, Dept. 116, 20 West 22nd Street, New York 10.

BUY Wholesale thousands nationally advertised products at big discount. Free "Wholesale Plan". American Buyers, 629-S Linden, Buffalo, New York.

NEW "Sponge" Wall Cleaner. Erases dirt like magic. Wallpaper, painted walls, ceilings Saves redecorating. Lightning seller. Samples sent on trial. Kristee 158, Akron, Ohio.

BIGGEST commissions. Sell waitresses, beauticians, others, guaranteed uniforms $3.98 up. Nylons, cottons. Sizes 9-52. Free bonus uniform. Full, part time. Experience unnecessary. Free 114 style catalog. Upland Uniforms, 208 East 23rd, Dept. H-6, New York.

BARGAINS—terrific savings—job Lots —Close-outs! Also save up to 50% on drygoods, clothing, hosiery, notions, drugs, toiletries, gifts, jewelry, television, etc. 2000 items. Send 25c for wholesale bargain catalog with special "get acquainted" offer which includes free $1.00 merchandise certificate. Reliable Jobbers, 311-J, North Desplaines, Chicago 6.

EXTRA money! Make up to 100% profit selling amazing value All Occasion greeting cards, gift wrappings, gifts. Bonus, Surprise offers. Experience unnecessary. Write for Feature samples on approval, free samples exclusive Name Imprinted Stationery, Napkins, free Catalog and Selling Guide. New England Art Publishers, North Abington 802-B, Mass.

BIG Money making opportunity. Exclusive line work uniforms. Jackets, pants, shirts, coveralls. Advertising embroidered. Every business prospect. Outfit Free. Master Div., Dept. 493, Ligonier, Indiana.

$10-$10-$10-$10-$10-$10. MAKE $10 And More daily by supplying friends, neighbors and relatives with wonderful, new variety of Elmira All-Occasion Greeting Cards. Personalized Stationery. Imprinted Napkins, gift wrappings and lovely gift bargains. Free Catalog. Samples on approval. Bonus. Fast Service. Ideal for Church and Club Funds too. Write today. Elmira Greeting Card Co., Elmira 28, N. Y.

IS $210 a week worth a postcard to you? Then rush card with name and address for special Free Trial Plan that sells amazing new Automatic Refrigerator Defroster "like hot cakes!" Write to Mr. Lewis, D-Frost-O-Matic Corp., Dept. T-103, 173 W. Madison, Chicago 2, Illinois.

BUY Wholesale—Thousands nationally advertised items. Save—Make Money! Free details. Durex Co., Box 672-M, Chicago, Illinois.

A Postcard Can Put You In A Fine Business! Complete line. Leather jackets, 151 shoe styles. Big commissions. No experience, no investment. Send postcard for Free outfit. Consolidated Shoe, Dept. CC-21, Chippewa Falls, Wisc.

BIG Profits In Spare Time! I'll send Free Assortment Full-Size Samples fine Foods, Household Necessities to ambitious Men-Women who need money. Friends, neighbors buy eagerly. Send no money. Just write Blair, Dept. 55LB-2, Lynchburg, Va.

CLEANS Windows without mess. Strange "dry" cleaning-cloth. Replaces liquids. Samples sent on trial. Kristee 157, Akron, Ohio.

HOTTEST seller ever! Get in on the ground floor! Huge profits await you as our agent selling full or part time new nationally advertised top quality Pennsylvania Saw sets. Tempered steel saws for every use—all on one handle. Hacksaw, crosscut, frozen meat and bone saw, pruning saw, keyhole saw, dovetail saw. Tremendous value everyone can use—everyone wants! Sells on sight! Send for free illustrated catalogue. James R. Barnet Co., Dept 2-PS, Box 188, Wellesley Hills, Massachusetts.

OPERATE "Escalator" Mailorder system, selling our products or any products. Fastest, most revolutionary mailorder system known. Write: Selbyco, Decatur 165, Ill.

MAKE your dreams of success come true! We can show you how. Sell direct exclusive Spring-Step cushion shoes—a new idea in foot comfort. Earn up to $25 daily! Full or part time. Free sales equipment. Write today! Dept. PS23, Ortho-Vent Shoe Co., Salem, Va.

UP to $50.00 in a week spare time and tailored suit for yourself without paying one cent. Write for plan and Free Sample Case. Pioneer Tailoring Co., Congress & Throop Sts., Dept. S-1121, Chicago 7, Ill.

CALIFORNIA sweet smelling beads, sensational sellers. Particulars free. Mission, 2328P West Pico, Los Angeles 6, Calif.

MAKE Money Spare Time plus New Car as encouragement bonus. Amazing 60 gauge nylons 3 pairs guaranteed 3 months or replaced Free. Write Wilknit, 2032 Wash., Greenfield, Ohio.

POSITIVELY Make $50.00 a day and up selling brand new item going to every type of Food and Beverage Store, Factories, Laboratories, Hospitals, etc. Samples furnished. Utility Durawear, 53 West Jackson Blvd., Dept. PS-2, Chicago 4, Ill.

QUALITY Ties, $2.00 values, $6.25 dozen, 6 for $3.50. Clip-on bows, $5.50 dozen. Money-back guarantee. Loren Specialties, 4351-B Flournoy, Chicago 24, Ill.

MEXICAN Feather Pictures. Sell on sight; 200% profit! Free details. Sample 20c stamps. (No Coins). Sylvias, Apartado 9036, Mexico City.

SELL Big Money-Maker to Men and Women. Easy handwork makes fast-selling useful articles. Sample free. Sunmade Company, Brockton 64, Mass.

SALESMEN, Distributors, fast selling costume jewelry direct from factory. Big picture catalog free. Pickcraft, C-19 Bank, Attleboro, Massachusetts.

FREE book "505 Odd, Successful Businesses." Work Home! Expect something Odd! Pacific-38C, Oceanside, Calif.

BIG Profits on Brand Names! Appliances, giftwares, etc., like Wearever, Bulova, Eversharp, Hickok, Silex, Detecto. Sell Themselves. New! Illustrated catalog Free! Over 280 items. Winderman, (Dept. D-23), 527 Hendrix Street, Brooklyn 7, N. Y.

MAGAZINE Subscription Agents. Bonus arrangements. Qualified Publications, 451 Kingston, Brooklyn 25, New York.

PAINTS—All kinds. 65c gallon up. Private label. Big profits. Certified Products, Louisville, Kentucky.

500% PROFIT selling multicolor, ready-made cardboard signs for every business. Dynamic samples and catalog, 25c. R. Velvetex, 200 W. 34th St., New York 1.

AGENTS urgently needed by manufacturer—sell genuine diamond crosses individually boxed. $24 dozen or $2.50 sample. Box 1119, Grand Central Station, New York 17, New York.

WANTED—man earn $500 month. Full or part time. Exclusive. $11 sale earns $7. You need $10 to start. Details free. Write Superior Products, Inc., Dept. 121, 3410 Main, Kansas City, Missouri.

"10-IN-1" Carryall Compact. Sensational $5.00 Value. Sample $1.00. Jakiela Products, 2644-P No. Western, Chicago 47.

44 HIGH-GRADE SALESMEN

RICH Opportunity for Men in their 50's. Healthful, pleasant occupation. No investment needed. 150 of our men made $500 to $3,000 in one month; many just beginners. Heckman made $104 first 2 hours; Crowley made $224 first day; exceptional earnings. Openings available. Write President, Dept. PS-2, Box 711, Fort Worth 1, Texas. If you live in Canada, write President, Dept. PS-2, 25 Industrial Street, Leaside, Ontario.

AD Matches! Sell Amazing Designs—20, 30, 40 and 240-light book matches. Biggest spot cash commissions; every business a prospect. Low prices for high quality. Repeats. Start without experience; men, women; full, part time. Buy Nothing! Sales kit furnished. Match Corp., Dept. PS-38, Chicago 32, Illinois.

ADVERTISING book matches—Cash in on big demand—sell Union label matches. Cuts for all businesses and political parties—Free powerhouse selling kit—low prices—protection guaranteed on repeat orders—Cash commissions. Superior Match Co., Dept. P-253, 7530 Greenwood, Chicago.

45 EDUCATIONAL & INSTRUCTION

PIANO Tuning Pays. Learn this profitable profession at home. Our Tonometer and mechanical aids make learning easy. No knowledge music necessary. Diploma granted. Largest and oldest school—55th year. G. I. Approved. Write for booklet. Niles Bryant School, 77 Bryant Bldg., Washington 16, D. C.

LEARN Piano Tuning, Repairing—at home in 30 days. Unlimited income. Phonograph recordings, tools and instructions furnished. Write Capitol City Tuning School, Department C-233, 129 East Michigan, Lansing 16, Michigan.

USED Correspondence Courses and Books sold and rented. Money back guarantee. Catalog free. (Courses Bought.) Lee Mountain, Pisgah, Alabama.

HIGH School—No Classes. Study at home. Spare time. Diploma awarded. Write for Free catalog. HBA-21, Wayne School, 2527 N. Sheffield, Chicago 14, Ill.

FOR an extremely profitable lifetime business, operate a Collection Agency. Quickly learned. Write Cole Associates, Syracuse 2, New York.

Copyrighted material

WANT A Diesel Job? New Opportunities to increase income. Higher Pay. More Money. We can help you Qualify. Tools. Shop method home training. Write today! Diesel. Tractor. Heavy Equipment Division. Interstate Training Service. Dept. 2-B. Portland 13. Oregan.

BOOKKEEPERS! Increase your earnings! Operate your own simplified "Dollar-A-Week" Bookkeeping and Tax Service. Full or spare time. Details Free. No obligation. Ellis. Box 203-B. Cedar Grove. North Carolina.

WELDING training pays at Hobart Welding School. Box P-231. Troy. Ohio. VA Contract. Best equipment. Catalog Free.

OPPORTUNITY without end! Industry is constantly absorbing more trained Electronic and Instrument Technicians than we can graduate. Start studying for a future in Electronics now. For information. write the Ward School of Electronics. 44 Niles Street. Hartford 5. Connecticut.

BE a Real Estate Broker. Study at home or in classroom in leading cities. Write for Free Book today. Weaver School of Real Estate. 301 Law Bldg.. Kansas City. Missouri.

PRACTICAL Nursing—Learn Easily at Home. Spare Time. Big Demand. good earnings. High School not necessary. Write for free facts. Wayne School. Dept. FH-12. 2525 Sheffield. Chicago 14. Ill.

WANT To Make More Money? Have a real career with a lifetime of high salaries? I'll show you how to succeed in the growing radio-television field that needs men. Write Ed Howes. Chief. Dept. 723. 4000 So. Figueroa St.. Los Angeles 37. No obligation.

ELECTRONIC Draftsmen—Many needed immediately by Defense Agencies and Contractors. Excellent pay. Pioneer Radio Engineer offers an original and exceptionally high class correspondence course to qualified ambitious young men and women. Details free. Leutz. P. O. Box 368. Silver Spring. Maryland.

BECOME a Doctor of Psychology or Metaphysics. Learn secret of contentment. happiness. Win degree of PsD. or MsD. Solve mental worries. Free book. College of Universal Truth. 5038-K Broadway. Chicago.

BARTENDING and management. American Bartending School. P-334 S. Wabash. Chicago. Illinois.

SEWING Machine Home Repair-Care-Sewing Hints Manual. Sold worldwide since 1945. Only $2.95. Worth $10.00 or $2.95 refunded. Taylor Service. Hamilton 2-PS. Ohio.

TAKE Your Choice of a Profitable Business of your own. A Better Job or High Sparetime Earnings in Uncrowded. Billion-Dollar field of Custom Furniture Upholstery. Earn while you learn At Home to turn your hobby skill into a career. easily. quickly. through the famed N. Y. State-licensed Upholstery Trades School course. Course includes—Free of extra charge—4 Big Outfits of tools. complete frames and materials to make beautiful upholstered furniture you can keep. or sell for more than the cost of tuition. You can actually make and repair furniture soon after starting—earn money. get "set" for a steady prosperous future. Master craftsmen teach you custom upholstery. re-upholstery. furniture finishing—Plus 4 Big Extras—slip cover. pillow. window cornice. and drapery making! Our Free book tells all about this ever-growing business. explains how you can earn as you train at home. You don't leave your job until you're ready for a big pay. big profit opportunity. Write today to Upholstery Trades School. Dept. BB-1602. 721 Broadway. New York 3.

MEDICAL Laboratory Technicians in great demand. We train you in your own home. Catalogue free. Imperial Technical Institute. Box 973-B. Austin. Texas.

INCREDIBLE! Unprecedented! Look under "Personal"! Bijou. Box 1727-V2. Hollywood 28. California.

U.S. Gov't Jobs! Men-Women. 50.000 jobs open Now! Start high as $316.00 month. Experience usually unnecessary. Can you qualify? Free 32-page book shows jobs. salaries. requirements. sample tests. Write Today: Franklin Institute. Dept. W-22. Rochester. New York.

RADIO. electricity. algebra. trigonometry. calculus. Individualized instruction. Free details. Write: Registrar. New Correspondence School. Box 27. St. John's Place Station. Brooklyn 13. New York.

FREE home study course in basic economics. offered as a public service. Recommended by many leaders. Send postcard for complete information. Henry George School. Dept. P. 50 E. 69th Street. New York 21. New York.

USED Correspondence Courses and Educational Books Bought. Sold. Rented. Catalog Free. Educational Exchange. Summerville. Georgia.

SCHOLARSHIPS worth thirty million dollars awarded last year. New fact-packed book. "College Scholarships For The Asking." tells how to obtain scholarships in the U. S. and abroad. $2.00. Key Publications. Box 6751. Fort Davis Station. Washington 20. D. C.

TOP Positions open. Study Traffic-Management. Free details. Union Institute. Lakewood 2. New Jersey.

HYPNOTISM. Sample lesson Free. Write Baltimore School of Hypnotism. Dept 302-A. 4214 Belmar Avenue. Baltimore 6 Maryland.

DRAFTING. Home Study. Free Details. Monroe Institute. PS-2. Alton. Illinois.

46 CONTESTS

TIE-Breaker picture puzzles exposed. $2.00. Wenograd. Box 1495. Philadelphia 5. Penna.

MILLION-Dollar Opportunity via Prize Contests! (Confidential Service) Enclose Stamp. National Contest Bulletin. Box 2685-S. Miami 16. Florida.

47 DETECTIVES

DETECTIVE Training. Phillips Secret Service System. 1917-C North Kenneth. Chicago 39. Ill.

DETECTIVES—Work home—Travel. Experience unnecessary. Detective Particulars free. Write. Wagoner. P-125 West 86th. New York 24

DETECTIVE Training Course. only $12.00. Diplomas awarded. Details free. Virginia Detective Agency. Hampton. Va.

48 LANGUAGE OUTFITS

LISTEN. Learn A Language by Linguaphone At Home. quickly. easily. master Spanish. French. German. Russian. Japanese—any of 29 languages through Natural Linguaphone World's-Standard Conversational Method. Add to service. job. travel opportunities. Send for Free book. State if Veteran. Linguaphone Institute. 5402 Mezz.. Rock. Plaza. New York City.

49 REWEAVING

$5.00 HOUR possible. spare. full-time at home. Instructions shipped by recognized authority for no-risk examination. Men-women reweave burns. tears. moth-holes. like new. Free details. Skil-Weave 372. Los Angeles 24.

50 BUSINESS SERVICE, INFORMATION, NAME LISTS

CANADA Unlimited. Investment opportunities in Oil. Mines and Industry Specific questions $2.00. Cascade Information Co.. P. O. Box 5. Banff. Alta.. Canada

500 LATE cash names $2.00. Harvey Teeple (PS) Decatur. Indiana.

MAILING Lists. All kinds 1000 $5.00. Dixie Service. King. N. Carolina.

51 SPECIAL SERVICES

PUT your idea on paper. All phases of drafting: pencil. inking. patent drawings. nothing too small! Write estimate. Personalized Drafting Service. 22 Zabriskie Street. Jersey City 7. New Jersey.

REMAILING letters 25c each. Pierce. 927 Hickory Street. St. Louis 4. Missouri.

CONSTRUCTION Workers Tax Service. For information write: 1111 Commerce Bldg.. St. Paul. Minnesota.

TEXAS Remails—(The Alamo City) 25c; with Texas Stamp 35c. 3 for $1. Box 8124. San Antonio. Texas.

52 AUTHORS SERVICE

NO Luck finding a book publisher! Write for Free Booklet PS. Vantage Press. 120 West 31st. New York.

HOW to Write Short Stories. Mysteries. Articles Learn at home for career or extra part-time income (A. Aretz sold first 2 stories for $255.) Professional writers show you how. Send today for Free book which explains opportunities. Palmer Institute of Authorship. Desk UM-23. 1680 N. Sycamore. Hollywood 28. Calif.

BEGINNING Writers: Get $1 to $20 checks daily writing simple children's stories. articles. poetry in your sparetime. Experience unnecessary. Our instructions reveal how. Details Free. W. Herman. 7016 Euclid. Cleveland 3. Ohio.

I Want New Writers to cash checks of $1 to $100 offered daily. The easiest way to write for pay. No previous experience necessary. Free Details. Saunders M. Cummings. 6840 Odin St.. Studio 15. Hollywood 28. California.

53 ADVERTISING

ADVERTISE: 24 words. 100 Canadian Newspapers. $5.50. Lists Free. Advertising Bureau. 10511-P Springfield. Chicago 43.

FREE 1953 Guide with rates. ideas for classified. mail order advertisers. BT Nationwide Advertising Service. 2108 Payne. Dept. A. Cleveland. Ohio.

FREE Booklet! "12 Ways to Get Better Results from Mail Order Advertising!" Beardsley Advertising Agency. 2045-A Chestnut. Philadelphia 3. Pa.

MAIL-Order specialists catering to small advertisers. Free copy writing service. Send for rate book. Nelson's. 356 S. Broadway. Los Angeles 13.

54 CARTOONING, SIGN PAINTING, CHALK TALKS

"HOW To Make Money With Simple Cartoons"—A book everyone who likes to draw should have. It is free; no obligation. Simply address Cartoonists' Exchange. Dept. 192-C. Pleasant Hill. Ohio.

MOLDED plastic letters for signs. Faulkner. Box 45. Produce. Florida.

9 ALPHABET 3 Numeral pattern sets and raised wood letter catalog $1.00. Sign Letter Distributors. P. O. Box 101. Mineola. New York.

LEARN Sign Painting at Home. Test Lesson Free. Ben Kerns. Box 812-PS. Greenville. South Carolina.

CHALK Talks. Laugh Producing Program. $1.00. Illustrated Catalog 10c. Cartoonist Balda. Oshkosh. Wisconsin.

LEARN top flight cartooning through easy Landon Picture Chart Method. Former students include creators of "Steve Canyon." "Freckles." "Out Our Way." "Winnie Winkle." many others. Earn while learning. Send 10c for ability-testing Picture Chart. full details. Landon Cartooning School. 5322 CTS Bldg.. Cleveland 14. Ohio.

CARTOONISTS: Amateur. Professional. Prepare for the expanding Television field with Max Fleischer's instructions. Address: Vera Coleman. Secretary. 60 East 42nd Street. New York. New York.

55 TYPEWRITERS & OFFICE MACHINES

TYPEWRITERS. Adders. Filing Cabinets. Office Equip. All Kinds—Wholesale—Retail. Free Catalogue. Eskay. 718 Flushing Ave.. Brooklyn 6. New York.

ROYAL Quiet DeLuxe Portable typewriters. New. $76.83. Free Catalog. 1001 bargains. Dealer's Mart. Dept. S2A. 11 Willard Ave.. Mt. Vernon. New York.

TYPEWRITERS. Printing Devices. Office Machines. supplies. appliances. Dixie Graph. King. N. Carolina.

TYPEWRITERS $22.50. Adders. Duplicators $12.95. Meier's. 118 Spruce. Wichita 7. Kansas.

56 RUBBER STAMPS & OFFICE SUPPLIES

THREE Line Rubber Stamp. $1.00! Morey's. 2529 Roosevelt. Redwood City 2. California.

3 LINES 65c; pad 40c; Signature $2.35. Print-right. Wauwatosa. Wisconsin.

57 PRINTING, MULTIGRAPHING, ETC.

1000 BUSINESS Cards $2.50 Prepaid samples Free. Reliable Print Shop. 907 East Jefferson. Louisville 6. Ky.

1.000 BUSINESS Cards. $2.35 postpaid! Other printing! Dornfeld. Iron Ridge 27. Wisconsin.

BUSINESS Printing. Samples. Prices Free. Howprint. 723-S Eunice. Webster Groves 19. Missouri.

TWO-Color 8½x11 Letterheads. 100—$1.50. Samples. D'Yarmett Service. Newark. Ohio.

Copyrighted material

100 8½x11 LETTERHEADS and 100 Envelopes $2.00. Benneville Printing. Box 1931, Pittsburgh 30. Pa.

100 8½x11 LETTERHEADS $1.00 Postpaid. Envelopes same. Race Printing, Hudson, New York.

MIMEOGRAPHING, addressographing service. Lowest prices. Speed-O-Print, Box 307, Argo, Illinois.

200 8½x11 LETTERHEADS, 6¾ envelopes, $3.75. Yutz Press, Pottsville, Pa.

FINE Printing—Prompt service—Wide selection modern type styles, colors, cuts. Free samples, prices. Wilcox, Nicholls, Ga.

100 PRINTED Business envelopes or letterheads $1.00. Salesbooks $3.00. Broadbrook, Botsford, Conn.

8½x11 BOND Letter heads or 6¾ envelopes 250—$3.75, 500—$5.50, 1000—$7.00. Feather Wate business cards 250—$1.75, 500—$2.50, 1000—$3.75. Raised print 50% extra, prepaid. Magnolia Press, Box 1176, Burbank, California.

58 PRINTING OUTFITS, SUPPLIES

DO your own printing. Save money. Simple rules. We supply everything. Print for others; good profit. Raised printing like engraving, too. Have home shop. Details free. Kelsey Presses, V-8, Meriden, Conn.

ENVELOPE printer, Supplies, Kits, Plans 3c. Yutz Press, Pottsville, Penna.

PRINTING Presses. Type Supplies. Lists 3c. Turnbaugh Service, Loysville, Penna.

MAKE your own, self-molding, rubber printing cuts. Plexirubber, Argyle 2, Wisc.

PRESSES, Supplies. Paper catalog 10c. Custom, Box 211-S, Springfield, Missouri.

59 PATENT ATTORNEYS

INVENTORS. For "Invention Record" form, contact Carl Miller, Registered Patent Attorney, Woolworth Building, New York.

C. A. Snow & Co.—S-427, Snow Building, Washington 1, D. C. Registered Patent Attorneys. Write for information.

INVENTORS: Without obligation, write for information explaining the steps you should take to secure a Patent. John N. Randolph, Registered Patent Attorney, 207 Columbian Bldg., Washington 1, D. C.

INVENTORS: Learn how to protect your invention. Unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and prepared to serve you in handling your patent matters. "Patent Guide for the Inventor" containing detailed information concerning patent protection and procedure with "Record of Invention" form will be forwarded to you upon request—without obligation. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 32B-A District National Building, Washington, D. C.

INVENTORS—If you consider your invention to be something of importance take steps to protect it with a United States Patent which gives you the right to exclude ohers from making, using and selling your invention as claimed. "Patent Protection for Inventors" outlines steps to take to secure patent protection. Mailed promptly without obligation. Victor J. Evans & Co., Merlin M. Evans, Registered Patent Attorney, 841-B Merlin Building, Washington 6, D. C.

"INVENTOR'S Guide" free. Frank B. Ledermann, Registered Patent Attorney, 154 Nassau Street, New York.

INVENTORS—If you believe you have an invention, you should find out how to protect it. The firm of McMorrow, Berman & Davidson with offices in Washington, D. C., is qualified to take the necessary steps for you. Send for copy of our Patent Booklet "How to Protect Your Invention." We will also send you an "Invention Record" form. No obligation. They are yours for the asking. McMorrow, Berman & Davidson, Registered Patent Attorneys, 1436 Victor Building, Washington 1, D. C.

PATENTS—Irving L. McCathran, 316 McLachlen Bldg., Washington 1, D. C. Registered Patent Attorney.

60 FOR INVENTORS

INVENTORS, if you have an invention for sale, patented or unpatented, write Institute of American Inventors, Dept. 30A, 631-E St., N.W., Washington 6, D. C.

PATENT searches $5.00, including patent copies. 48 Hour Airmail service. "Record of Invention" free. Same careful, reliable searches conducted for patent attorneys. Capitol Patent Service, Box 664-S, Washington 4, D. C.

INVENTORS. For "Invention Record" form, contact Carl Miller, Registered Patent Attorney, Woolworth Building, N. Y.

INVENTORS: Without obligation, write for information explaining the steps you should take to secure a Patent on your invention. John N. Randolph, Registered Patent Attorney, 206 Columbian Bldg., Washington 1, D. C.

INVENTIONS Promoted. Patented or Unpatented. Established 1911. Write Adam Fisher Company, 183 Enright, St. Louis, Mo.

CASH For your ideas. 280 Manufacturers need inventions, patented or unpatented. List free. Invention Bureau, 208-S Clinton, Oak Park, Illinois.

INVENTORS: Learn how to protect your invention. Unless the inventor is familiar with patent matters he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and prepared to serve you in handling your patent matters. "Patent Guide for the Inventor" containing detailed information concerning patent protection and procedure with "Record of Invention" form will be forwarded to you upon request—without obligation. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 32A-A District National Building, Washington, D. C.

INVENTORS—Send for free patent information book and inventor's record. Registered Patent Attorney. Associate Examiner, Patent Office 1922-29; Patent Attorney & Advisor, Navy Department 1930-47, Gustave Miller, 23PSI Warner Building, Washington 4, D.C.

PATENT Searches $5.00, 48-hour service. Patent Applications and Drawings prepared. Record of Invention forms free. Write Miss Ann Hastings, P. O. Box 176, Washington 4, D. C.

INVENTORS—If you have a valuable invention, you are advised to authorize a preliminary search through appropriate classes of United States patents. This firm is registered to practice before the Patent Office and is available to make such search and report to you concerning the probable patentability of your invention. Instructive booklet with "Evidence of Invention" form sent upon request. Victor J. Evans & Co., 842-B Merlin Building, Washington 6, D. C.

PATENT Searches, $5.00 including patent copies. Same reliable search as conducted for patent attorneys. Promotion and marketing services also offered. Free protection forms, 48 hour service. Patent Service Institute, 945-B Pennsylvania Avenue, Washington 4, D.C.

"INVENTOR'S Guide" free. Frank B. Ledermann, Registered Patent Attorney, 154 Nassau Street, New York.

INVENTORS—If you believe you have an invention, you should find out how to protect it. The firm of McMorrow, Berman & Davidson with offices in Washington, D. C., is qualified to take the necessary steps for you. Send for copy of our Patent Booklet "How to Protect Your Invention." We will also send you an "Invention Record" form. No obligation. They are yours for the asking. McMorrow, Berman & Davidson, Registered Patent Attorneys, 1435 Victor Building, Washington 1, D. C.

INVENTORS! Idea Men! Learn How and Who to contact with your ideas. Costs very little! Free information. Notturno, 1104-W Broadway, Hewlett, New York.

PATENT Searches $5.00, 48-hour airmail service. Patent Applications, Drawings and Amendments prepared. Free Record of Invention. Write Patent Engineering Service, 711 14th Street, N.W., Washington 5 D. C.

INVENTORS! For "Copyright, Design & Patent Guide" contact Mr. Metzlerr, 11 West 42nd, New York 18.

61 INVENTIONS WANTED

INVENTORS—If you have a patent application pending in the Patent Office or if your patent has already been granted, we can help you market your invention through our nationwide contacts. Write today for complete information—free. Patent Sales Company, Box 1225, Washington, D.C.

INVENTIONS promoted. Patented or Unpatented. Established 1911. Write Adam Fisher Company, 183 Enright, St. Louis, Mo.

INVENTORS: Hundreds of manufacturers have requested our assistance in locating marketable new products. Complete information, free. Institute of American Inventors, Dept. 30C, 631—E Street, N.W., Washington 4, D. C.

MARKETING Aid—Nation Wide. Patented, patent pending. Booklet free. Market Contacts, 719-B2, Magnolia, Tupelo, Mississippi.

INVENTIONS wanted. Patented; unpatented. Tremendous Manufacturers lists. Global Marketing Service, 1404 Mitchell, Oakland 1, Calif.

INVENTIONS Wanted. Patented or Patent Pending. 21 years experience Promoting Inventions. National Service Bureau, 3122 Meramec, St. Louis 18, Mo.

CASH buyers for ideas and inventions. Write National Inventors Institute, 4097 East 131st St. Cleveland 5, Ohio.

63 MANUFACTURING

MODEL making, small lot manufacturing, precision parts, satisfaction guaranteed. L. Moran, 38-44 Waverly Ave., Seaford, Long Island, New York.

64 MODELS, MODEL SUPPLIES

SHIP and Yacht model fittings: blueprints. Send 25c for illustrated catalog No. 27—Listing hundreds of items. A. J. Fisher, 1002-2 Etowah, Royal Oak, Mich.

FAMOUS Model Catalogs: Ships, Fittings, Hints, 169 pgs. 50c; Worlds Tinplate Trains, 148 pgs. 50c; H.O. Trains—Manual, 140 pgs. 50c. Each includes 50c refund coupon Also Collectors Soldiers 25c; Old Time Autos, 15c; 100 model projects, 10c. Polk's, Dept. P-24, 314 5th Avenue, New York City 1.

SHIP Model and yacht supplies, complete large 64 page catalogue. 30c. Wm. Wild, 510 E. 11th St., New York City.

BRASS Gears and model supplies for the inventor. Send 10c for catalog. Pierce Model Works, Tinley Park, Ill.

BUILD miniature homes with our accurately-scaled materials. Send 25c for booklet and samples. Architectural Model Materials Inc., Dept. S-23, 4208 Armitage Avenue, Chicago 39.

POWER Models. Unusual steam, gasoline and traction engines. Metals, tools, accessories. Catalog 50c. Charles Cole, Ventura, Calif.

STEAM engines; boilers, castings. Catalog 25c. Anton Bohaboy, 2297 Price, Rahway, New Jersey.

MINIATURE furniture kits. Solid cherry. Easily assembled. Large selection. Cat. 20c. Culver Miniatures, 194 61st, Niagara Falls, New York, Dept. E.

SHIP Models Ltd. Kits, fittings. Plans. Custom Work. 1953 catalog 25c. Box 751, Brookline 47, Mass.

WORLD'S Finest Illustrated Catalog-Handbooks. Railroads 92 pages 35c. Airplanes, Boats, Crafts, Hobbies, Tools 60 pages 25c. No Stamps. Print Name. E and H Model Hobbies, Room 80, 130 W. Chelten Avenue, Philadelphia 44.

1902 CADILLAC ¾" long, kit 50c. H. Stebbins, 453 Pleasant Street, Brockton 33, Mass.

65 HOME CRAFTSMAN

LEATHERCRAFT, Copper Tooling, Textile Painting, Beadcraft, Shellcraft. Many other crafts. Big Free catalog shows everything you need. Kit Kraft, 7373 Melrose, Hollywood 46, Calif.

LEATHER, tools, lacing, supplies. Free Catalog. National Handicraft, 199 William St., New York 7.

"PRACTICAL Painting, Wood Finishing" shows how to get professional results. Furniture finishing, workshop projects, home decorating. Complete Modern brush and spray methods. Tricks you've never seen. Write Home Craftsman, 115-F Worth St., N. Y. 13.

89 FULL size Jig Saw patterns of beautiful shelves, ornaments, toys, novelties Plus "How, Where to Sell." Only $1.00. Mastercraft 24S, 7041 Olcott, Chicago 31, Ill.

OUR biggest Leather and Craft Catalog yet! 1000's of items. Send 25c (refunded with 1st order). Russo Handicraft Supplies, Dept. 105, 245 S. Spring, Los Angeles, California.

Copyrighted material

TOOLING Copper. Free Instructions. Flock. Tools. Finishes. Bestcraft. 949 Kenwood. Inglewood. Calif.

LEATHERCRAFT. New Stylecraft folder Free. New Kits illustrated. Filigree Belts. Billfolds. Purses. etc. Send 25c new catalog. Refunded first order. Apache Leather Co. 2804 East Washington St., Phoenix. Arizona.

LEATHERCRAFT For Pleasure or Profit. Make easy-to-assemble purses. belts. gloves. woolskin toys. 100 other items for gifts or to sell. Send 10c today for big catalog. Largest Leathercraft stock in U.S. J. C. Larson Co., 820 S. Tripp. Dept. 2954. Chicago 24

PLASTICS home-craft course for Men and Women. Tells and shows how to make hundreds of fast selling plastics products. All plastics and materials for 23 projects included in course. No special tools needed. Course pays for itself. Write for Free booklet. Interstate Training Service. Dept. D-2B. Portland 13. Oregon.

"TOPS" In everything for leathercraft. Low priced kits. leathers. tools. lacing. Catalog 10c. Crown Leathers. 22 Spruce Street. New York 38.

PINKING Shears. only $2 postpaid. Manufacturer's Christmas overstock. Guaranteed $7.95 value or refund. Lincoln Surplus Sales. 529 Main St.. Evanston 1. Ill.

HOBBYISTS. Homemakers & Handymen—Send for Free Illustrated Catalog. Highbridge Co.. 2 East 184th Street. New York 68. New York.

BIG Savings Leather—Now. for first time. you can buy full sides of top grain cowhide at our special. amazingly low "tannery-to-you" prices. For details. write Dept. 6. W. D. Byron & Sons. Williamsport. Md. Fine cowhide tanners since 1832.

FURNITURE—Modern Prefabricated—Save $$$$—You Assemble. Artcraft. East Peoria. Illinois.

93 "ORIGINAL Idea" Jig Saw patterns $1.00. Professional drawing quality printing. Full size shelves. toys. lawn ornaments. novelties. Walker Studio. PS-2. 4343 Lindell. St. Louis 8. Mo.

LAMP Size Cypress Knee $1.00! Cy Products. Ella Street. Lafayette. La.

AMAZING new Generator Flashlight. latest design. beautiful plastic case. Serviceable. fascinating. Guaranteed. $2.00 postpaid. Illustron. Moorestown. N. J.

LAMPCRAFTERS—Cypress knee debarked for lamp $1.00. Lamps. Box 218. Oakdale. Louisiana.

90 ALL new full size lawn ornament and novelty patterns. up to 20" high. Only $1.00. Mastercraft 22S. 7041 Olcott. Chicago 31. Illinois.

LAWN Ornament Patterns! Giraffe Family. Suckling Foal. 50c. Pauls Plans. 2233A No. 35th. Milwaukee 8. Wisconsin.

VIOLINMAKERS. Amateurs. Professionals. Fine tone European wood. materials. supplies. instructions. Tools. Patterns. Illustrated catalogue 10c. refunded. Premier Violin Supplies. Dept. VPS. 430 South Broadway Los Angeles 13. California.

100 FULL size Jig Saw patterns up to 20" high. only $1.00. Pattern Service. Medway 8. Mass.

HOMECRAFTSMEN—No shop complete without Jet Jr. Combination Moulding & Dado Head—$4.75. Quickly converts saws for shaping. moulding. door lipping. grooving. dadoing. etc. Large variety ¼" thick cutters available as needed—$2.95 set. Send today for Free Catalog. Jet Tool Co.. Dept. PS. Lemon Grove. California.

3 FULL size what-not shelf patterns. 25c pattern list included. Connolly's. 825 Randolph. St. Paul 2. Minnesota.

BUILD a better garage door to match your home. Save money. Choose from 40 designs—6 prize winners. Simple instructions. Valuable 28-page book. Send 50c. Tavart Company. Paramount. California.

LEATHERCRAFT Tools. Leather Embossing Plates. Craft Accessories. Dies. Catalogue 10c. Louis Jones Engineering Company. 1613 Main. Fort Worth. Texas.

KNOCKDOWN Cedar Chest. Lumber and Veneers. Free Price List. Giles Co.. Brownsboro. Alabama.

JEWELRY Making. Plastic and Wood Plans; 25c. Leisure Products. 416 Rose. West Hazleton 30. Pa.

LEATHERCRAFT Tools. Lacings. H. Byrd. 3406 Montrose Avenue. Richmond. Va.

MAKE Leathercraft your hobby. It's fun to make leather belts. billfolds. purses right in your own home. Show your friends the results. Free Catalog shows how. Tandy Leather. Box 397-D. Tulsa. Okla.

GENUINE Suede Buckskins. Finest Full Length Skins $2.95. Sold Everywhere $9.95. Money Back Guarantee. A. Frank. 45 Vesey. New York City 7.

66 BUILD IT YOURSELF

SEND for big new 1953 illustrated catalog that will show you how to turn your spare time into cash—making quick-selling. highly profitable lamps. Every home a prospect. Hundreds doing it—you can. too. No experience or special tools required. Catalog No. 7 contains 56 pages filled with shades. shade frames. figurines and bases. oil lamp converters. boring compound and dozens of similar items. Also all kinds of sockets. cords. pipes. harps. finials. bases and hundreds of other parts—everything you need. Special 8-page section shows 6 beautiful lamps in kit form—ready to assemble. You buy wholesale. sell at retail—make Big profits. Send 25c today for new 1953 catalog and wholesale price list—you'll be glad you did. The 25c will be refunded on your first order. Gearon Co.. Dept. 500-A2. 28 S. Desplaines. Chicago 6. Ill.

BUILD Your Own "Tractor". Free information. Eltraco D-5. Camptonville. Calif.

BUILD Modern Home Cost $2.000. 2 bedrooms. bath. living. utility detailed plans $2. Branan Real Estate. Claflin. Kansas.

FURNITURE—Modern Prefabricated—Save $$$$—You Assemble. Artcraft. East Peoria. Illinois.

BUILD with Concrete. Fieldstone. Earth. Movable form system cuts costs. Construction simplified. Free literature. Smith PS. Box 36. Eagle Creek. Oregon.

"CONCRETE Block Homes." 32-page booklet on how to build. $1.00. H. C. Lightfoot. Civil Engineer. Richboro. Penn.

BUILD a better garage door to match your home. Save money. Choose from 40 designs—6 prize winners. Simple instructions. Valuable 28-page book. Send 50c. Tavart Company. Paramount. California.

FREE handbook build sawmills. block machines. freezers. tractors. scooters. Nichols Company. Purvis 3. Mississippi.

67 OLD GOLD, JEWELRY, WATCHES, ETC.

HIGHEST Cash Paid For Old. Broken Jewelry. Gold Teeth. Watches. Silverware. Diamonds. Spectacles. Platinum. Free information. Satisfaction Guaranteed. Rose Smelting Company. 29-Y East Madison. Chicago.

JEWELRY making. Send 20c for illustrated catalog. Milady-Fair Co.. G.P.O. 1328. New York City 1.

5000 JEWELRY styles you can easily make yourself—Pins. Earrings. Bracelets. Rings. matched ensembles. Instructions and catalog 10c. Barrys. 126 Ardsley Court. Newark. N. J.

WATCHES Practically Wholesale to wearer Direct. Save up to 60% on Famous Make watches. diamonds. jewelry. silverware. gifts. home needs and other merchandise. Free Catalog. America's Greatest Value. Send name and address to Maryland Distributing Company. Dept. C-94. 501 E. Baltimore Street. Baltimore 2. Maryland.

RHINESTONES. jewelry settings. cameos. sequins. beads. Send 10c for Illustrated Catalog. J & M Novelties. Dept. CB-4. Griffith. Indiana.

68 TOBACCO & PIPES

100 CIGARS. $4.75 postpaid. Packed 25 in vacuum tin. all Havana filler. money-back guarantee. Others. Ace Mail Order Co.. East Orange 2. New Jersey.

69 FOR THE HOME

BESSEN Dishwasher. Automatic. Portable. Nationally advertised low $69.50 retail price. For literature write Albert Co.. Dept. 8. 1409 Farwell Ave.. Chicago 26. Ill.

70 OF INTEREST TO WOMEN

QUILT pieces. doll remnants. patterns. samples. postpaid—Rainbow. Estill Springs 12. Tennessee.

WOMEN Who Sew! Invisible Reweaving is for you! Up to $10.00 profit per hour in spare time. Earn as you learn. Pay as you earn. Huge demand guarantees earnings! Details free. Fabricon. Dept. D-2. 8342 S. Prairie. Chicago 19. Illinois.

EXOTICALLY enchanting perfume $2.00 bottle. Jepson Distributors. 141 W. Robert. Salt Lake. Utah.

MAKE Money Evenings cutting wanted items from your newspaper for our publications. Torrey. C-4. Melrose 76. Mass.

72 WANTED MISCELLANEOUS

SCRAP Mercury (Quicksilver) containers supplied. Tantalum—Bismuth—Tungsten. Metallurgical Products Co.—Established 1909. 35th & Moore Streets. Philadelphia 45. Pa.

USED Books Bought. List for Dime. Books. Box 63. Lexington. Kentucky.

73 WEARING APPAREL

FREE Catalog of clothing for Big Men—Waist 46-66; neck 17-22. Burns-Martin. Dept. 437. 121 Summer St.. Boston 10. Mass.

74 PLAYS, STORIES, ETC.

ACTS Plays. Skits. Blackouts. Parodies. Monologues! Catalogue Free! "Writers." Box 575. Hollywood 28. Calif.

75 TATTOOING SUPPLIES

TATTOOING Course and Supply Brochures. 25c. Zeiss School. 728 Lesley. Rockford. Illinois.

76 DRAWING, SUPPLIES & EQUIPMENT

DRAFTING and artists' materials catalog—thousands of items—25c (deductible first $2 order). Gordon's. 219 Madison. Chicago.

LEARN Drawing. 20 lessons. 147 beautiful pictures. $1.00 complete. Aldcroftt Studios. 1206 Maple. Los Angeles. Calif.

ATTENTION: Draftsmen. Engineers. Students—Limited openings for agents. Take orders in spare time on drafting supplies. Attractive commissions. Alvin Company. Windsor. Conn.

77 TREASURE FINDERS

TREASURE Hunters! New 11-pound featherweight Model 101 locator for gold. silver and minerals. Money-back guarantee best available. Also Geiger Counters for uranium prospectors. Complete information free. The Goldak Company. 1540 W. Glenoaks Blvd.. Glendale 1. Calif.

SELECTIVE metal and mineral detector. Revolutionary design. Distinguishes metals from black magnetic sands. Readily detects metals under salt water. Also Geiger Counters and Mineralights. Free literature. Gardiner Electronics Company. 2018 N. Dayton. Phoenix. Arizona.

GOLD. Silver. Metal Detectors. Geiger Counters for Uranium. Mineralights. Sensational new fully guaranteed models. None Finer. Information Free. Detectron Co.. 5631 Cahuenga Blvd.. North Hollywood. California.

TREASURE—M-Scope Geiger Counters—Mineral Locators. Why buy something inferior when you can buy the best at a lower price? Backed by years of experience. Fully guaranteed by factory. Detects minerals. metals. gold. silver. coins. Payment plan available. Proven superior performance. Free 16 page illustrated booklet. Fisher Research Lab.. Inc.. Palo Alto. Calif.

PLANS for Inexpensive Metal Detector and List of over 100 Lost Treasures. $1.00 complete. Don. 316 N. Jefferson. Elk City. Oklahoma.

78 WATCH REPAIRING

WATCHMAKERS'—Jewelers' complete informative catalogue 20c. Bengal Company. Culver City. California.

WATCHMAKERS'—Jewelers' complete plies. Repairs. Catalog. Gales. Box 1000. Chicago 90. Illinois.

WATCH and clock repairing books for hobbyists. Free information. North American. Dept. 23-B. 2320 Milwaukee Avenue. Chicago 47. Illinois.

Copyrighted material

5 ELGIN Waltham, Illinois, Hampden Gents' wristwatches needing minor repairs, $18.00. Write for prices. B. Lowe, Holland Bldg., St. Louis 1, Mo.

WATCHMAKERS! Beginners! Watches, Movements. Descriptive list. Box 150, Chicago 90 Illinois.

79 MISCELLANEOUS

MAKE. Sell Artificial Flowers, Corsages, Chenille Dolls, Jewelry. Starting kits, Fibre, Leaves, Shellcraft, Rhinestones, Sequins, Findings. Wholesale Catalog 10c. Profitkrafts, 4509T257 Lorain Ave., Cleveland 2, Ohio.

OUTDOOR Toilets, Cesspools, Septic Tanks cleaned, deodorized with amazing new product. Safe, easy, economical to use. Double waste digesting action. Saves digging, pumping. Satisfaction guaranteed by 150,000 customers. Postcard brings Free sample. Burson Laboratories, Dept. E-53, Chicago 22 Ill.

LEATHERCRAFT. Everything needed by beginners, advanced hobbyists and professional leatherworkers Largest stock of supplies in U. S. Moderate-priced tooling leathers, top quality calfskins, tools, supplies, kits. Send 10c for Big Catalog. J. C. Larson Co., 820 S. Tripp, Dept. 2955, Chicago 24, Illinois.

PERSONALIZE—Decorate glassware. Etch designs and monograms easily and safely with Etchall in three minutes. Send $1.00 for trial kit. Etchall, Inc., Columbia 27, Missouri.

BUY Wholesale thousands nationally advertised products at big discount. Free "Wholesale Plan". American Buyers, 629-SS Linden, Buffalo, New York.

ASSEMBLE stencil postcard printer. Parts, instructions, $3.95. E M. Co., 4837 Kirk Street, Skokie, Illinois.

BIG interesting mails three months 25c, year $1.00. Harvey Teeple, Decatur, Ind.

RECEIVE Magazines, samples, catalogues. Mails from everywhere. Offers, hundreds. Get listed 25c. Rorick, Box 86-M, Cincinnati 26, Ohio.

YOUR Leather Jacket renovated expertly. Free circular. Berlew Mfg. Co., Dept. 7, Freeport, N. Y.

WIDE Shoes For Men! E to EEEE only. Money back guarantee. Free catalog. Hitchcock Shoes, Hingham 2082, Mass.

PANNING Gold lesson—Catalogue Beginners supplies. Mining Books, Maps, "Where To Go" Free. Old Prospector, Box 792D2, Lodi, Calif.

STUDY Wildlife, game warden, fish, park, forestry and patrol service. Details free. Write Delmar Institute, D16, Whittier, Calif.

300 BIG Mails guaranteed, samples, offers, plans, propositions. 12 months listing, $1.00, (refundable). Wright Publications, 2276 Hubbard, Memphis 8, Tenn.

GUARANTEED Tax Savings up to $300 yearly or your money back. Simply send $5 for complete details to Dyar Taxsaver, Box 17, Monroe, Louisiana.

LOOK in your wallet! You have many valuable cards, photos, that need lifetime protection sealed permanently in plastic. Wallet size 35c each, 4 for $1.00. John Wycoff, Box 68a, Waverly, Tennessee.

HEARING Aid Batteries Mailed Anywhere. Send for Free Price List. Braver, 56 Courtenay Road, Hempstead, New York.

80 PERSONAL

MEXICAN legal matters. A. Espejo, Box 234, Hermosillo, Sonora, Mexico.

DETECTIVE'S Opportunities. Detective particulars free. Write, Wagoner, P-125 West 86th, New York 24.

PSORIASIS Victims: Hopeless? New Discovery! Free Trial offer. Write Pixacol, Box 7097-S, Cleveland, Ohio.

"HOW Can I Find Out?" You Can! Information confidentially developed. Any matter, person, problem. World-wide. Officially licensed. Established 1922. William Herman, 170 Broadway, New York.

BORROW by mail. Loans $50 to $600 to employed men and women. Easy, quick. Completely confidential. No endorsers. Repay in convenient monthly payments. Details free in plain envelope. Give occupation. State Finance Co. 323 Securities Bldg. Dept. Y-14, Omaha 2, Nebraska.

HAPPINESS, Romance, Contentment. Interesting, confidential information sent Free to single persons. Write today. Strone, 2488-PS Concourse, New York 58.

BIBLE reveals Time Of End. Free. Write: Harvest, Jefferson City, Missouri.

HAND Guide. Corrects your Penmanship in 10 hours. Write, Perfect Penmanship, Box 665-35P, St. Louis, Missouri.

SKINNY? Amazing bodyweight gains reported! Proven method. Confidential information. Cambria, Box 26-E, Cambria Heights 11, New York.

"D-FOG" Prevents fogging, steaming eye glasses. Avoid embarrassment, accidents. Guaranteed. Years supply 50c. D-Fog, Box 205, Gene Autry, Oklahoma.

JOIN National Guild Hypnotists. Details, Hypnodiscs etc. 10c. Guild, 48B Harlem, Dorchester 21, Massachusetts.

LATEST Methods treating Piles, Fistula, Colon-Stomach disorders. Write for free book. McCleary Clinic and Hospital, E244, Excelsior Springs, Mo.

"INTERESTING Mails"—25c keeps your mail box full three months. Bentz, Desk-H/93, Chatawa, Mississippi.

INCREDIBLE! Unprecedented! Become a mental superman overnight! Floor everybody! No studying! "Memoprop" does all your thinking! It's uncanny! Revolutionary! Write: Bijou, Box 1727-V2, Hollywood 28, Calif.

GO around world $700, how $1.00. Remailing from worldwide $1.00. Cassel, 70 Beverly, Toronto, Canada.

INFORMATION for single people by Human Relations Consultant. Dr. B. Long, Box 375, Los Angeles 53, Calif.

DON'T learn too late that you have high blood pressure! Hypertell pulsimeter gives visual pulse reading and warns of existing Hypertension. "It's later than you think". Fountain pen size, carry in your pocket, guaranteed $3.00 delivered. No C.O.D. please. Hypertell, Box 336, Coulee Dam, Washington.

PALM Beach Postmark! Letters, Cards remailed 25c each. Box 1104, West Palm Beach, Florida.

CONFIDENTIAL information for single people, leading to happiness—romance. Write today! Dr. Karl Miles, Ph.D., Director, Personal Acquaintance Service, Inc., 601-G South Vermont, Los Angeles 5, Calif.

IT'S New—Wonderful—"T.D.T." for "Itchy Scalp" and "Dandruff Control", send $3.00 money order for formula. Also remedy for "Bad Odors" of feet. No stamps. T.D.T Laboratories, 615 West Kibby St., Lima, Ohio.

MEXICAN Law. General Practice Attorney. 1203 Arizona Street, El Paso, Texas.

LETTERS remailed San Francisco Postmark 25c. Private receiving-forwarding address available. Shanks, Box 3110-G, San Francisco 19, California.

FREE Booklet! Your Aura is your future. Aura, 2516-P W. 3rd Street, Los Angeles 5, Calif.

YOUTHFULLY long. Short way to live thus. Secrets revealed. Alfalfa, 2066C University Place, Washington, D. C.

MAKE your own fingerprints and handprints for lifetime identity of your loved ones. Dr. Ranald, world's foremost handanalyst, offers complete kit plus handreading chart for only $1.00. Ranald, Box 131-A, Baldwin Park, California.

LETTERS reairmailed from Havana $1.00. Jose Rabade, Apartado 3404, Havana, Cuba.

LET'S swap Neckties. Send yours with $1.00. Receive others. Ti Trade, Box 886-A, Trenton, New Jersey

Beauty in 3rd DIMENSION

Our figure pictures come to life in breathtaking 3rd Dimension when viewed through the magic viewer. The figures actually seem to step right out of the frames in third dimensional depth and beauty. Send $1.00 for Magic Viewer, and complete SAMPLE assortment. ☆ HAVE FUN!! ☆

HOLLYWOOD SALES
3414-U West Magnolia Blvd.
Burbank, California

IF YOU CAN SELL—LOOK AT THIS

Millions sold at $12.50 and $9.95. Now hitting new sales peaks at $7.95 with up to $4.00 easy profit for you.

How the women love it! They all want this amazing attachment because in 5 seconds it transforms their old style refrigerators into modern, automatic defrosters. Flash demonstrator. Instant sale in 4 out of 5 calls at this new low price. Yet you make as high as $4.00 on each fast sale. Reynolds making $140.00. Rush name for FREE Selling Kit and offer of sample demonstrator to all who answer this ad. The HOLWIN is guaranteed for 2 years—and we guarantee your sales. Don't wait. Rush name at once.

DEFROSTER SALES CO.
415 North La Salle Street
Dept. H-92, CHICAGO 10, ILL.

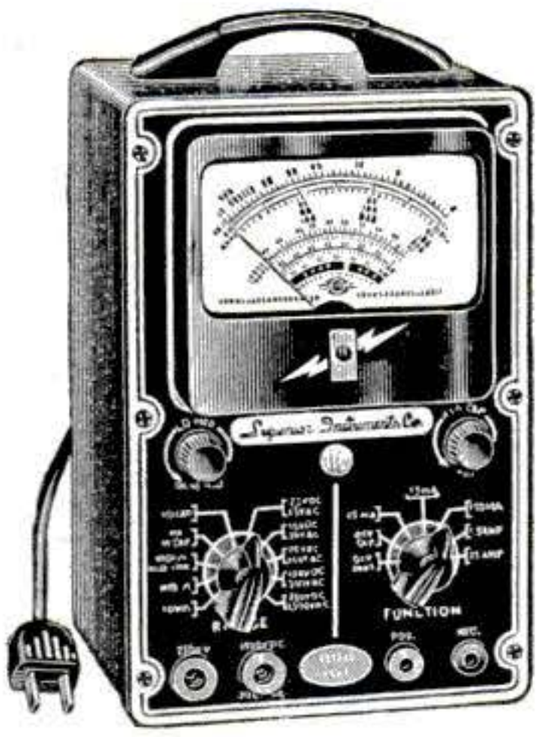
FREE
Send Name
Rush name for free sales kit and offer of demonstrator sample. Sales skyrocketing. Send name. Get in on big money.

Copyrighted material

Superior's New Model 670-A

SUPER-METER

A COMBINATION VOLT-OHM MILLIAMMETER PLUS CAPACITY REACTANCE INDUCTANCE AND DECIBEL MEASUREMENTS



The Model 670-A comes housed in a rugged, crackle-finished steel cabinet complete with test leads and operating instructions. Size 6¼"x9½"x4½".

SPECIFICATIONS:

D.C. VOLTS: 0 to 7.5/15/75/150/750/1,500/7,500 Volts.

A.C. VOLTS: 0 to 15/30/150/300/1,500/3,000 Volts.

OUTPUT VOLTS: 0 to 15/30/150/300/1,500/3,000 Volts.

D.C. CURRENT: 0 to 1.5/15/150 Ma. 0 to 1.5/15 Amperes.

RESISTANCE: 0 to 1,000/100,000 Ohms 0 to 10 Megohms

CAPACITY: .001 to 1 Mfd. 1 to 50 Mfd. (Quality test for electrolytics)

REACTANCE: 50 to 2,500 Ohms, 2,500 Ohms to 2.5 Megohms

INDUCTANCE: .15 to 7 Henries 7 to 7,000 Henries

DECIBELS: —6 to +18 +14 to +38 +34 to +58

ADDED FEATURE: The Model 670-A includes a special GOOD-BAD scale for checking the quality of electrolytic condensers at a test potential of 150 Volts.

$28.40 NET

SOLD ON EASY PAYMENTS AT THE NET CASH PRICE

No interest or carrying charges added.

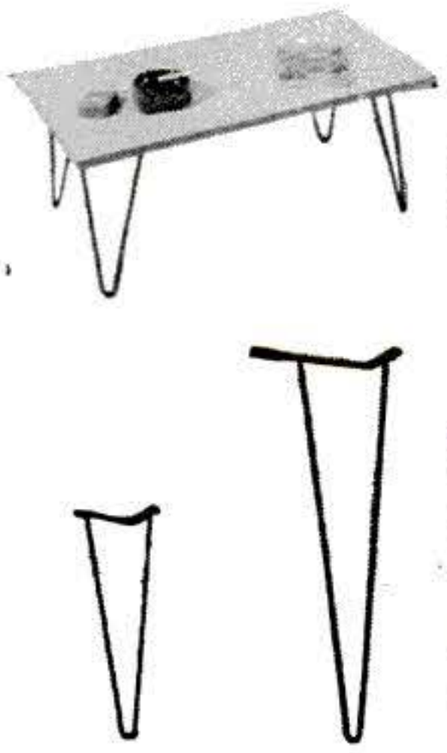
MOSS ELECTRONIC DISTRIBUTING CO., INC.
Dept. B-45, 38 Murray Street, New York 7, N. Y.

Please rush 1 Model 670-A SUPER METER. I am enclosing the down payment of $7.40 and agree to pay balance, $3.50 per month for 6 months.

Name.....

Address.....

City.....Zone.....State.....



Design and Build Your Own

WROUGHT IRON FURNITURE

Simply fasten legs with screwdriver to plywood, flush doors, etc. Screws are included. Finished dull black.

Leg Height	Attach under	Diam. Iron	Price set of 4
6"	sofa couch	½" rd.	$ 7.95
9"	bureau	⅜" "	6.75
12"	coffee tbl.	⅜" "	6.95
16"	cocktail tbl., bench	⅜" "	7.95
22"	lamp, end tbl.	⅜" "	9.95
28"	dining tbl., desk	½" "	14.95

Shipped prepaid. No C.O.D.'s. Calif. residents please add sales tax.

E. F. LAWRENCE IRON WORKS
Dept. PS-2, 2911 Whittier Boulevard
LOS ANGELES 23, CALIF.

AMERICA'S BIGGEST KAYAK VALUES!

BUILD *Your Own*. Complete easy-to-assemble kit with full instructions, pre-cut parts, canvas, dope, trim & hardware. Nothing else to buy! Ideal for fishing, duck hunting, paddling. Light to handle onto car or through woods.

DEDHAM KAYAKS DEDHAM-MASS

IT'S FUN—IT'S SAFE—IT'S SPEEDY

Write Today Dept. PS-2 **Models $18.75 and up.**

***Brand New* NYLON COVERS**

for outdoor storage of cars, boats, machinery, equipment, etc.

Strongest, lightest covers ever made. New DuPont Nylon with 1 side rubberized and the other of soft nylon, cannot scratch car surface. Will not harden, crack or mildew. Folds away easily. Secured with heavy elastic. Protection against wind, rain, sun, snow, frost, etc. 15-day money-back guarantee. Material very many times stronger than regular plastics.

only 7 lbs.

Standard Size **$17.95**

Larger Size for Caddy, Linc., Etc. $2.95 extra *plus 80c postage*

Give Car Model

Nylon tarps to order, heavier weight, double coated, brass grommets, 9c sq. ft.

DEFENDER TEXTILE CORP., 317 Canal St., Dept. PS, N.Y. 13, N.Y.

GROW MINIATURE TREES
FOR PROFIT & PLEASURE

New! Amazing! Living Miniature Trees only 12" tall. Chinese Ming, Japanese Elm, Tiny fruit trees that actually bloom and bear. Grow from seed at home for fun or Big Profit business. Make gorgeous home decorations worth many dollars, yet cost but pennies to grow. Fascinating, artistic hobby. Secret Oriental plan details, FREE.

MINIATURES, 1020 Richman Fullerton 2, Cal.

$9.00 DOWN DELIVERS Brand New 29 Pc. ARGUS C-3 OUTFIT

Balance as little as $6.12 per month!

ONLY THE GENERAL could give you so much: Argus C-3 Camera, Flashgun, Carrying Case, 35mm. Projector, 4 Filters, Filter Holder, Sun Shade, 10 Flash Bulbs, 6 rolls Ansco or Kodak reloads, 1 roll Color Film, 1 - 30"x40" screen, copy of "This is Photography".

ALL BRAND-NEW FOR ONLY $99.50

Use the General's famous "Pay as You Shoot" Plan

$9.00 DOWN - BALANCE $6.12 MONTHLY

Mail order with down payment and short note about yourself, your occupation, age, employer for last two years, and two references. Write today!

The **GENERAL CAMERA CO.**
Mail Order Div., Dept. P-23, Chicago 45, Ill.

STOP WINDSHIELD GLARE WITH THIS GLARE FILTER

Latest Plastic Car Visor. Fits all cars & Trucks. Gives the two tone effect used in expensive 1952 & 1953 cars and trucks.

Protects your eyes against harmful glare. Optically transparent. Will not warp or crack. Scuff proof—Moisture proof. Cannot rattle or vibrate.

Money back guarantee. Sorry, No C. O. D.s. Send $1.00 Now Mailed prepaid. **$1.00**

GLARE FILTER 1915-B Archer Ave. Chicago 16, Ill.

AMAZING MILITARY MINIATURES!

PERFECTLY SCALED
PRECISION DETAILED

SEND 35¢ TODAY! FOR COMPLETE CATALOGUE

Authenticast

PLANES

KINGFISHER 75¢

SHIPS

DESTROYER ESCORT $1.00

TANKS

5180

WALKER BULLDOG $1.75

Miniature models that duplicate those used in U.S. military pre-combat training. Full line of replicas of tanks, ships & planes seen in current combat.

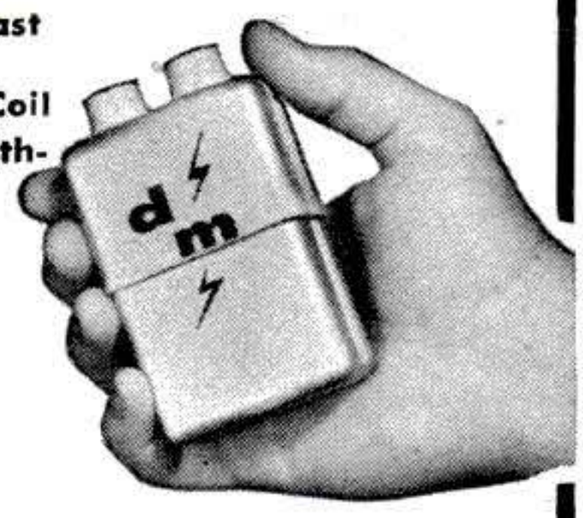
COMET METAL PRODUCTS CO., INC. RICHMOND HILL 18, L.I. N.Y

Copyrighted material

DYNA-MITE POCKET RADIO

POWERFUL! PERSONAL! PRACTICAL!

- Covers Standard Broadcast Band
- Sensitive Ferrite Tuned Coil
- Batteries and Parts Fit Within Ivory Plastic Case
- Tiny Acorn Low Drain Tube
- Loud Clear Tone
- Genuine Formica Chassis
- No Antennae Used for Local Reception
- No Ground Connection Needed
- Long Range Reception Guaranteed
- Picture Diagramme for Radio Beginners.



$5.99 postpaid

"This neatly engineered little KIT was designed to give you a real personal portable radio that you can enjoy anywhere without disturbing others. Use it on camping trips, in bed, in your office or just anywhere. Remember this is not a weak crystal set, it is a POWERFUL VACUUM TUBE receiver that will give you good local and long distance reception. SET less batteries ONLY $5.99 postpaid! C.O.D. orders accepted with $1.00 deposit within United States and possessions. If you desire batteries, we can supply them at only $1.50 per set INCLUDING EXTRA "A" BATTERY or you may obtain them from your local hearing aid concern."

1500 Ohm Alnico Magnet Receiver $1.45 when Purchased with Kit. ALL PARTS FULLY GUARANTEED.

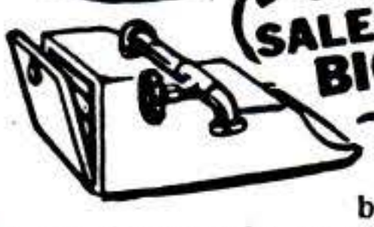
Order Today at this Unbelievable Low Price!

PRECISION ELECTRONICS LABORATORY

DEPT. 1 **PLACERVILLE, CALIF.**

NEW! CHEAP! OIL BURNER

SWEEPING THE COUNTRY!



SALESMEN BIG MONEY

SLIPS INTO ANY COAL RANGE, STOVE OR FURNACE

Amazing quick, intense heat. By finger-tip control. Cheaper than coal. No more shoveling coal or ashes. SENT ON TRIAL. Prove it pays for itself quickly by what it saves. $1 bonus for testing. We'll let you try one in your own home for one month. Write for details today. NORTHWEST MFG. CO., 20-B Main, Mitchell, S. Dak.

FREE BINOCULAR CATALOG!

Listing over 75 sizes, types, of brand new binoculars including UNITED, German Carl Zeiss, Hensoldt; American Wollensak, Swiss, etc. Bargain priced from $14.95 by America's leading Binocular Retailer. Written Guarantee certificate. Rush name for your FREE 40 PAGE three color money saving Binocular catalog.

UNITED BINOCULAR CO., Dept. A-7916
9043 S. Western, Chicago 20. Dealers Wanted

TEAR GAS

100% PROTECTION

A REAL SURE-FIRE SELLER!

THUGS AND THIEVES BEWARE!

Here is a tear gas pencil gun which discharges smothering clouds of tear gas to instantly stop, stun and incapacitate the most vicious man or beast. A safe and effective substitute for dangerous firearms. No permanent injury. Needed in Stores, Banks, Autos and Homes, everywhere to protect Life and Property. No skill required. Handle our tear gas as a side line and you'll soon give it full time. For a quick start send $4.25 for complete demonstrator outfit consisting of an Automatic Pencil Gun with 10 demonstrators and 3 powerful Tear Gas cartridges fully guaranteed. Many thousands now in use. Order your outfit today. Not sold to minors.

Hagen Supply Corp. **Dept. A502** **St. Paul 4, Minn.**

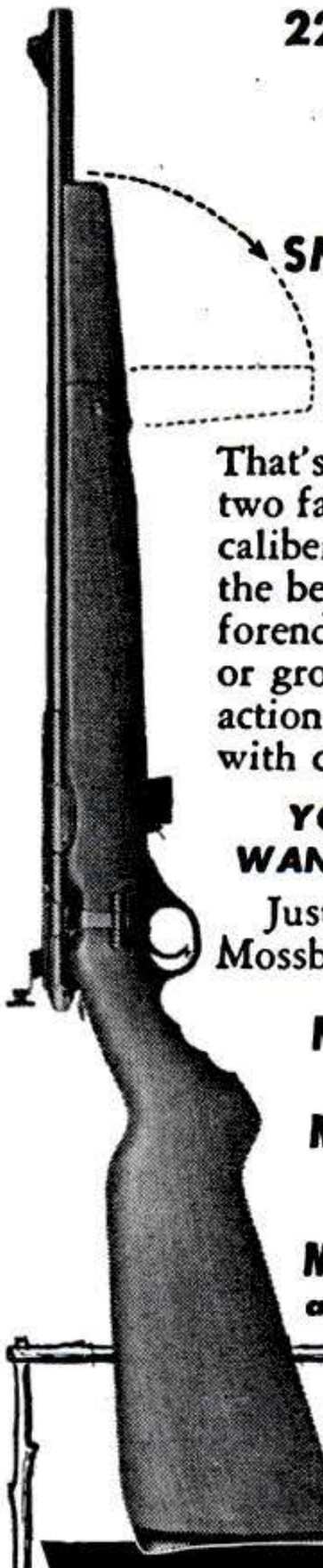
---

22 CALIBER

CARBINES

SMALL PRICE

BIG VALUE



That's the quick story of Mossberg's two fast-handling, 7-shot, 5 lb., 22 caliber carbines. They shoot with the best of them. And note hinged forend, which serves as hand grip or ground support. Choice of bolt action repeater or automatic, both with clip-type magazine.

YOUR MOSSBERG DEALER WANTS TO SHOW YOU THESE

Just see how much quality Mossberg gives you for so little!

Model #142 (BOLT ACTION) $23.95
($24.95 West of Rockies)

Model #152 (AUTOMATIC) $29.95
($30.95 West of Rockies)
Both above with peep sight

Model #152K . . . *Same prices as #152, but with OPEN SIGHTS*

JOIN A GUN CLUB
Organized shooting is loads of fun—and you'll find the nicest folks in town are members.

O. F. Mossberg & SONS INC.

Send for **FREE** *catalog*
No sales at factory

36502 St. John St., New Haven 5, Conn.

PRESTO! ANYONE CAN MASTER GLAZE

Car Owners! Meet Master Glaze—the sensationally different luster for new and used cars! Not a wax—not an oil polish—not a paint!—nothing that "smears" over the surface.

MASTER GLAZE is a unique discovery—a creamy liquid—quick and easy to apply! Gives a hard, glass-like surface. Even gasoline cannot dull it! Lasts six months to a year! Amazing luster—beautiful, sparkling clean and brilliant! Doesn't finger-mark—doesn't smear! A match box full glazes an entire car. Seals the pores—protects! NOTHING LIKE IT!

AGENTS
An unusual opportunity! Quick, flashy demonstrator. Big profits. Good territory. Write today!

FREE SAMPLE
Just send your name and address to
MASTER GLAZE CO., 7720-760 W. Harwood Ave., Milwaukee, Wis.

Copyrighted material

COULD YOU USE $1,000,000?

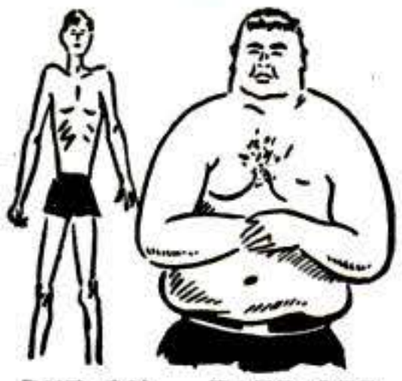
We'd like to Hand You the Million—But You Realize That's Impossible. BUT WE CAN MAKE YOU HEALTHY!

FIRST TIME OFFER!

$3.95 Postpaid

Sold Nationwide at $5.95

weighs only 1½ lbs.!



PUT ON MUSCLE — TAKE OFF FAT

MR. AMERICA USES HIP POCKET GYM!

Among Mr. Americas of the last three years there's a fan of HIP POCKET GYM! A top health and strength magazine recently photographed him exercising with HIP POCKET GYM.

HIP POCKET GYM

THERE'S NO MAGIC, NO MIRACLE

HIP POCKET GYM helps both stout and skinny people. Using scientific and medical principles, it helps the body help itself by *automatically adjusting to your strength and ability.* You do not have to be Mr. America—even children can use it!

SO SIMPLE! SO EASY! No nailing on walls—no crawling on floors—no swinging from ceilings—no lengthy correspondence courses! A few minutes a day in a lazy man's way rids you of that run-down, tired feeling!

- **Recommended By Over a Half Million People** during the past 25 years **without one word of advertising!**
- **Builds Health in Veterans' Hospitals!**
- **Scientifically Constructed** of pure natural rubber that actually improves with age! So light and compact—take it wherever you go!

5 DAY MONEY BACK GUARANTEE

FREE With every HIP POCKET GYM you get FREE a Complete Set of Health and Strength Exercises!

MAIL COUPON TODAY

MAJOR LEAGUE SUPPLIERS,
Dept. PS-3, 160 Green St., New York 12, N. Y.

Please send ....HIP POCKET GYMS @ $3.95 each. **PLUS FREE** set of Health and Strength Exercises. Total Enclosed $.....
☐ Check ☐ Money Order ☐ $1 Deposit with C.O.D. Save Handling and Postal Charges by Sending Check or Money Order.
Name.....
Address.....
City.....Zone....State.....
If I am not satisfied for any reason whatsoever, I may return the Hip Pocket Gym within 5 days for full refund!

NO WIRES! TALK! SING! GAGS! THRU YOUR RADIO!

Portable Home BROADCASTER

Only $9.95

Own this amazing broadcast outfit. Complete short range transmitting station in miniature! Broadcasts without wires to any radio within 75 ft. Sound quality marvelously clear and life-like. Your voice comes thru radio as from a local station. **Microvox** is simple, easily operated. Watch-like precision and a high-fidelity microphone . . . an instrument you'll be proud to own!

Includes:
Vacuum Tube
Switch—Tuner
Microphone
22½ Volt &
1½ Volt Batteries
Condenser
All Self-Contained

HUNDREDS OF USES IN HOME, BUSINESS, SCHOOL, OR CLUB

Sing, play instruments, make sound effects, use records. All the family can listen. Have Quiz Shows, Dramatics, Round Table Discussions. Fool family and friends with fake broadcasts. Practice music and voice control **Right Over Your Own Radio!** Microvox can pay for itself many times over as an Intercom, Baby Listener or Public Address System in small auditorium.

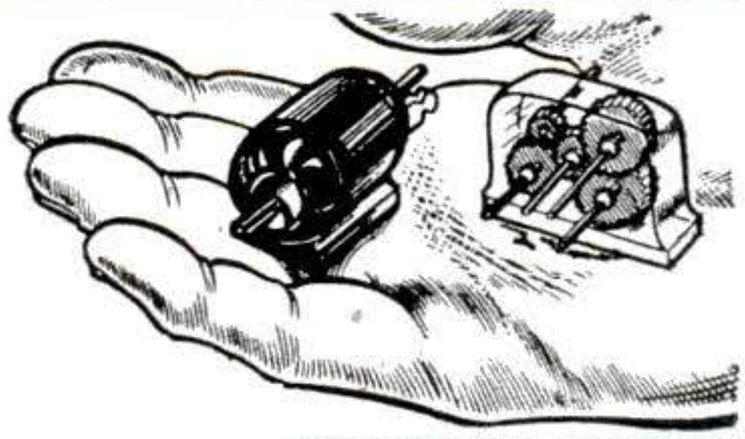
24 Hour Trial

Full instructions accompany each Microvox. Send only $1. Pay postman $8.95 plus small COD postage (or remit $9.95 and we pay postage). ABSOLUTELY GUARANTEED on money-back basis.

FREE—SOUND EFFECTS MANUAL with each Microvox (limited time only). Over 25 ways to make startlingly realistic SOUND EFFECTS . . . fire, storm, crash, pistol, etc. Learn the Radio Sound Effects business. A world of fun. Don't delay. Send your name, address and $1 now.

All the Family Listens on Radio

MICRO-SOUND CO., Dept. PSF
737 N. Michigan, Chicago 11



COMPLETE MOTOR & GEAR KIT HOUSING BATTERIES CLIPS only $2.98

POWERFUL MOTOR:

One of the smallest precision motors ever built yet does GIANT-SIZED JOBS. Drives Model Planes, Boats, Construction Sets, Working Models, Trains and Cars, etc., with amazing speed up to 6800 R.P.M. (or as little as 50 R.P.M. using the reduction gears that come with this exciting set. This MIGHTY-MIDGET does hundreds of jobs. It's a Honey! Looks exactly like a Big Motor yet measures 1"x1¼" and weighs one ounce. For only $2.98 YOU GET LOTS MORE with this Mighty Midget. You get a complete set of gears and pulleys and a transparent multi-ratio gear box as well as a battery clip with two batteries and instructions. NO SHOCKS, SPARKS OR SHORTS. NO TRANSFORMER NEEDED. Reverses immediately too! Endless hours of fun. Enclose check or money order for $2.98 for this entire set and we will pay postage. C.O.D. orders plus postage.

IMPERIAL SALES CO.
Dept. M-209, 480 Lexington Ave. N. Y. 17, N. Y.

REAL ESTATE

BE A BROKER

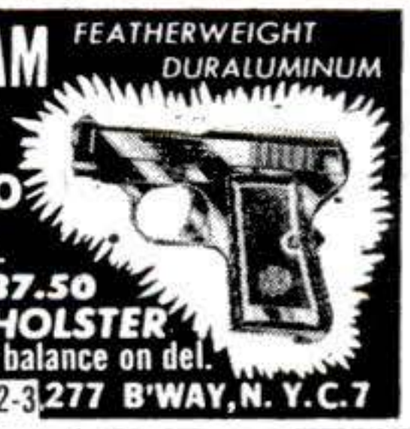
PAYS BIG! SEND FOR FREE, BIG, ILLUSTRATED CATALOG NOW! Graduates report making substantial incomes. Start and run **your own business quickly.** Men, women of all ages, learn easily. Course covers Sales, Property Management, Appraising, Loans, Mortgages, and related subjects. **STUDY AT HOME** or in classrooms in leading cities. Diploma awarded. Write TODAY for free book! No obligation.

FREE BOOK TELLS HOW

WEAVER SCHOOL OF REAL ESTATE (Est. 1936)
Suite 300 Law Bldg. Dept. PS Kansas City, Mo.

NEW .25 CAL. **BERETTA BANTAM** *FEATHERWEIGHT DURALUMINUM*

Sensational, improved 9 shot automatic pistol! Fits pocket or purse! Now only **32.00**

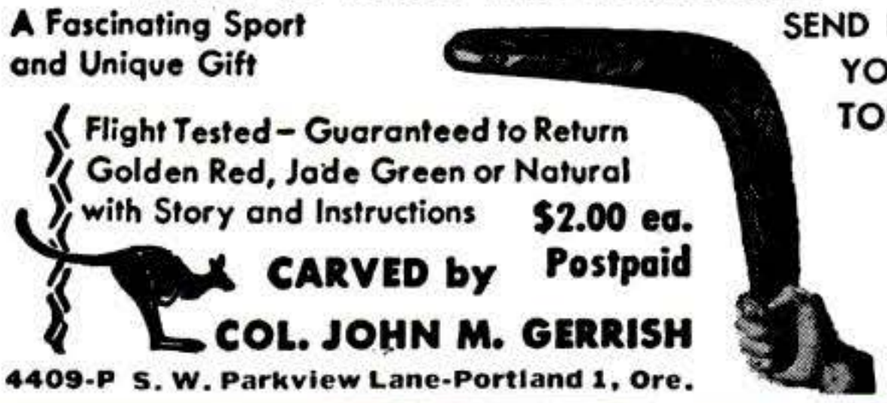


WITH GENUINE MOTHER-OF-PEARL HANDLES 37.50
FREE GENUINE LEATHER HOLSTER
Order by Mail • Send only $10 • Pay balance on del.
GODFREY IMPORT CORP. Dept. PS2-3 **277 B'WAY, N. Y. C. 7**

LEARN TO THROW THE BOOMERANG

A Fascinating Sport and Unique Gift

SEND FOR YOURS TODAY



Flight Tested – Guaranteed to Return
Golden Red, Jade Green or Natural
with Story and Instructions

$2.00 ea. Postpaid

CARVED by COL. JOHN M. GERRISH
4409-P S. W. Parkview Lane-Portland 1, Ore.

TRIPLE POWER MICROSCOPE
(100X - 200X - 300X)

ONLY $13.95 PPD.

Sensational instrument for students, schools, hobbyists, amateurs. Precision construction. Amazing value. Usually found in microscopes several times this low price. Hardwood case included.

Also Available 100X— 8.95 200X—12.95

5 DAY MONEY BACK GUARANTEE. SEND Check Or Money Order

Westchester Sales & Trading Co.
Dept. PS-2, P.O. Box 304, Larchmont, New York

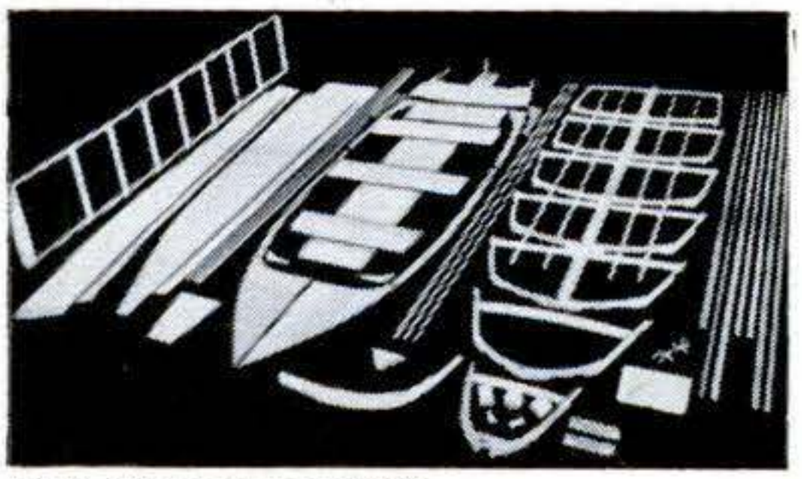
Party Records

FOR ADULTS ONLY

THEY'RE SENSATIONAL! Brand new series of exclusive phonograph records. Spicy songs that will make your party a howling success. Songs and music in a style you will like. Complete set of SIX DIFFERENT songs on good quality 10-inch 78 R.P.M. records, sent prepaid for $4.95 in sealed package. No C.O.D.'s.

NATIONAL, Dept. 478,
BOX 5—STA. E TOLEDO 9, OHIO

Copyrighted material



14-ft. DeLuxe Runabout Kit

SAVE ½ or more! Buy a new

CHRIS-CRAFT KIT

for as little as $45 full price!

Many more new kit models! Send for FREE catalog today!

8-ft. Pram Kit Boat—**$45**

10-ft. Pram Kit Boat—**$91**

EASY to assemble—fun, too! Precut Philippine Mahogany parts, Fir marine-plywood panels; brass fastenings; compound; decals; illustrated instructions. Also, new *lifetime* Chris-Craft Boat Trailers, priced from $99 (tax extra). Mail coupon today! (Kit prices quoted f.o.b. factory, subject to change without notice.)

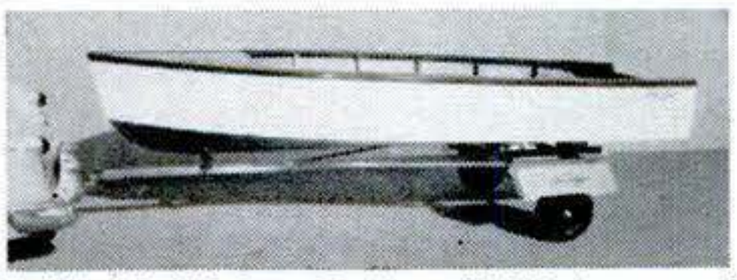
Chris-Craft Corporation, Algonac, Mich.

14-ft. Sportsman Kit Boat—**$139**

14-ft. DeLuxe Runabout Kit Boat—**$178**

17-ft. Kit Speedboat—**$449**

18-ft. Outboard Express Cruiser Kit Boat—**$595**



Model CC-650 Boat Trailer—**$129** (tax extra)
Complete line—300- to 2200-lb. capacities

Chris-Craft Corporation, Algonac, Mich. **FREE!**

Send FREE Chris-Craft Kit Catalog to:

Name_____

Address_____

City_____ State_____

GOVERNMENT SURPLUS B-29 GUN SIGHTS

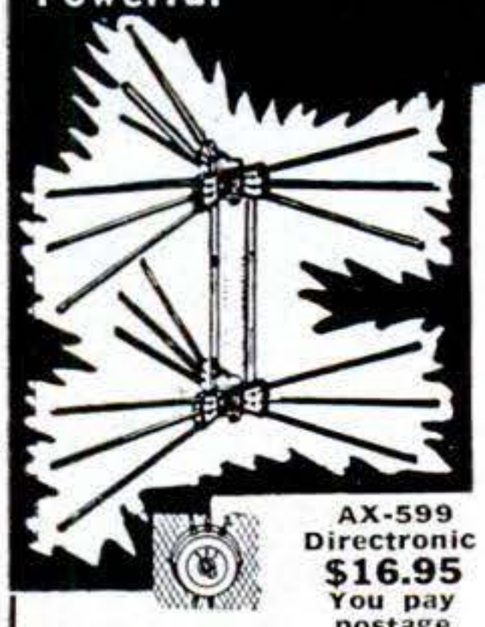
Have 1000 in original cartons. Cost U.S. Government $140.00 each. While they last **$3.75** each. Can be made into projection lens as in photograph, magnifying glasses, telescopes or many other things. The lens are 3½" F1/9 and have 2 single lens and one Achromatic. Get yours before they are all sold.

WICHMAN

1423 Berkshire Rd. Gross Pointe 30, Michigan

Amazing NEW MOTORLESS TV Antenna

Super Powerful **All Channel TV RECEPTION IN ALL DIRECTIONS**



Rocket DIRECTRONIC MOTORLESS TV ANTENNA

360° Electronically Switched Beam

- No Motors
- No Roof Orientation
- No Electric Power
- No Ghosts
- Flick of Switch Clears Picture Instantly

In the city or in a fringe area, the Directronic will out-perform ordinary antennas. Only the Motorless 360° Directronic TV Antenna offers "around the compass" reception WITHOUT Rotors. Clarity of picture will amaze, it's so bright, so sharply defined. AX-599 "Serviceman's Array" contains Hi-Pac molded insulator of extremely high tensile strength, 18 hi-tensile aluminum alloy elements, 1 set of connecting stubs (3), Universal U-Clamps for masts to 1½", Directronic Beam Selector, 75 feet of Tri-X Cable.

AX-599 Directronic $16.95 You pay postage

Do not remit more than complete purchase price. 25% deposit on C.O.D. orders, please. Money-back guarantee.

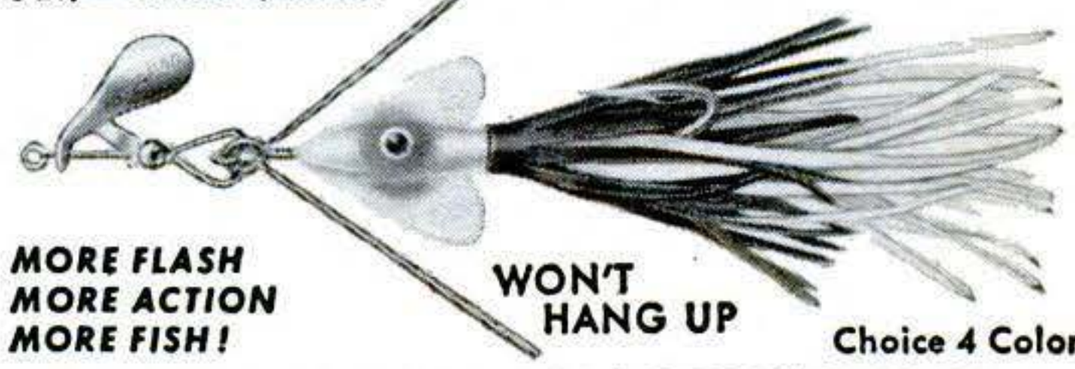
NATIONAL ELECTRONICS OF CLEVELAND

402 DELCO BLDG. CLEVELAND 3, OHIO

ROOKIE HITS JACKPOT WITH THE HAWAIIAN WIGGLER #2

R. B. Jacobs of Baytown, Tex., had never tried bait-casting before, but it didn't take him long to get convinced when he took this fine string of bass on his first attempt. The fishing spot was a lake on the White River (Arkansas) and the bait was the Hawaiian Wiggler No. 2. You can't beat the old No. 2 around pads, brush, stumps and logs. Live-looking rubber Hula Skirt. Spinning and light tackle size (1/4 oz.) or casting size (5/8 oz.)—each $1.15.

SHALLOW RUNNER



MORE FLASH
MORE ACTION
MORE FISH!

WON'T HANG UP

Choice 4 Colors

FREE WRITE TODAY FOR YOUR BIG FREE ARBOGAST COLOR CATALOG OF BAITS—FULL OF PICTURES OF CATCHES

FRED ARBOGAST & CO., INC.

2322 WEST NORTH STREET • AKRON 3, OHIO

Copyrighted material

"What a beaut! Must be that new Scott-Atwater Gold Pennant motor*!"

WRITE FOR FREE FOLDER!

Read all about the sensationally new Gold Pennant outboards. New in styling! New in features! New in performance! Write to: Dept. P-23, Scott-Atwater Mfg. Co., Inc., Minneapolis 13, Minn.

*7½ and 10 HP with Shift, "Stowaway" Tank, Twist Grip Speed Control

For Profit and Pleasure...

MAKE RIFLE FURNITURE!

Remington *Rolling Block Rifle*

Authentic 1869 Model .43 Cal. $9.95

FREE PLANS! **6 sets of working plans for making useful unusual furniture included with rifle.**

Unbelievable but true! This famous "rifle of the past"—long a collectors' treasure—is yours for only $9.95! Make it into useful, distinctive furniture for your home. Or mount rifle "as is" over fireplace...in den. A real money-making opportunity, too! Make "romantic" lamps, bookcases, ash tray stands. Earn $5-$10 an hour! Sell to friends, sportsmen, clubs, stores, even mail order. Our successful "Business Getting Plan"—free with rifle—tells how to sell quickly! Order one or more rifles now.

10 DAY MONEY BACK GUARANTEE!

FREE HISTORY! **A RIFLE OF THE PAST—WITH A PAST**

Relate the story of this famous rifle to all who admire your "rifle-furniture"! Once the world's most famous rifle. Adopted by 9 governments. Action unequalled for strength. Can be rebarreled to 45/70, other calibers. Wt. 9½ lbs. Length, 50½" Barrel, 35". Good condition.

INCLUDED WITH RIFLE
(no extra charge)
1. Set of 6 Working Plans.
2. Tested "Business Getting Plan".
3. History of Rolling Block Rifle.

CLIP AND MAIL TODAY!

WINFIELD ARMS CORP., Room PR-2
409 East Pico Boulevard, Los Angeles 15, California

Please rush me _____ Rolling Block Rifles at $9.95 each, under 10 day Money Back Guarantee. Include FREE Plans & History. I enclose $_____. (Send check or money order.)
Shipped Express Collect. C.O.D.'s, $5 Deposit Per Rifle.

NAME_____
ADDRESS_____ ZONE_____
CITY_____ STATE_____

DEALER INQUIRIES INVITED. WRITE TODAY!

Made stronger to last longer

E&J FOLDING WHEEL CHAIRS

- Easy handling
- Comfortable
- All welded joints
- Chrome plated
- Accessories and modifications available

See your dealer or write for catalog

FOLDS TO 10 INCHES

EVEREST & JENNINGS

761 No. Highland Ave., Los Angeles 38, Calif.

AUTO-SHOCKO Have some REAL FUN with your car. With AUTO SHOCKO you can give anyone who touches the outside surface of your car a HARMLESS but VERY EFFECTIVE shock. When the AUTO SHOCKO switch is on, the entire outer surface of the car becomes charged. You can also charge your buddy's car by touching your bumper to his. Then he won't be able to get into his car until you turn off your switch. Can also be left on while car is parked to keep vandals from scratching or damaging your car. Will not run down your battery. AUTO SHOCKO is probably the best FUN MAKER you will ever own. Easily installed in a few minutes. Sent complete with AUTO SHOCKO unit, wire, switch, etc. Price $9.95 ppd., or COD plus postage. $1 deposit required on COD orders.

MORBARCO MFG. CO., Dept. S, 192 Arlington, Lawrence, Mass.

SHIP MODEL KITS

Largest supply in New England. Fittings — Blueprints — Books. All prices. Write Dept. PS53. BIG ILLUSTRATED CATALOG 25c

JAMES BLISS & CO., INC.
342 Atlantic Ave., Boston 10, Mass.

121 Years in Business

ANTIQUE GUNS

HUNDREDS OF BARGAINS!

BIG ILLUSTRATED CATALOG
PIONEER GUN SHOP
DEPT. I 11010 VICTORY BLVD., NO. HOLLYWOOD, CALIF.

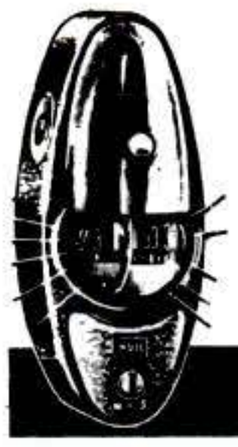
SEND 50¢

CABLE PLANE

Fully self-propelled. Offers thrill of flight. Safe. Endless possibilities for multiple installations. Travels in either direction—turns at will. Could be coin-operated. Have full-sized working model. Could use overhead rail. Patented. Will sell. Write

DON GRAZIER, *Inventor*
DIXON, MONTANA

KEEP YOUR BEARINGS ON TWISTING HIGHWAYS



A HULL AUTO COMPASS immediately sets you straight, after spinning through modern traffic circles and cloverleaf gateways. It's one of the countless occasions you'll check your HULL for directions. Write for local dealer's name, free literature.

MORE HULLS IN USE THAN ALL OTHERS COMBINED

HULL MFG. CO.
P.O. Box 246-E2, Warren, O.

Beaconlite® $6.95 ILLUMINATED
STREAMLINE® $4.95 STANDARD [not illus.]

Copyrighted material

not everyone does as well, but E. O. Lockin, who started a business of his own, reports...

for 12 months I've averaged $800 PER MONTH INCOME —most of it clear profit for me!

• Mr. Lockin expresses his grateful thanks for the opportunity to make a decent living on his own. Many men have discovered how to be independent, to be freed of bosses and layoffs—to build their own future on a steady, dependable foundation. L. A. Eagles grossed more than $200 his first week. R. E. Traynor says, "*I made $62 gross in one day.*" Others report gross from $100 per week to $12,000 per year.

How much you make depends largely on *you*. You need no special skill, no large investment to start.

No shop necessary. Our ELECTRIC RUG WASHER cleans rugs and carpets like new right on the floor ...removes dirt and grime and helps to show their natural color and beauty. So efficient and safe for carpets, it is used by largest hotels and railroads.

You take no risk. Machines fully guaranteed. Mail coupon today for complete information including how to start making big profits quickly in YOUR OWN business. BIG opportunity. Send coupon now.

You, too, can start your own business. No special skill, no large investment required. Costs nothing to find out—no obligation. Mail coupon today for interesting FREE book.

VON SCHRADER MFG. CO., 5112 "R" PL, Racine, Wisconsin

Send at once (no obligation) your FREE booklet containing information about your ELECTRIC RUG WASHER and how I can start *my own* permanent, profitable business.

Name_____

Address_____

City_____ Zone____ State_____

VON SCHRADER MFG. CO.. RACINE, WIS.

GIANT BALLOONS

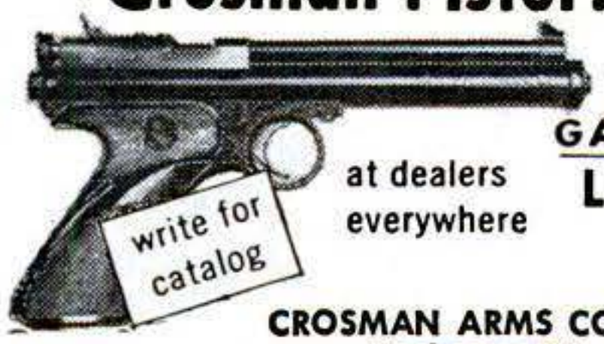
BIG fun for all! BIG boosters for BUSINESS! Genuine gov't. surplus weather & target balloons. Lots of fun in backyard, for parties, picnics, dances, fairs, etc. Sure to attract a crowd for business events, conventions, exhibitions, trade shows. Used by lodges, civic groups, schools from coast to coast. These are terrific attention getters! Send for your GIANT BALLOONS today.

3 Ft. Dia. 49c—6 Ft. Dia. 79c —13 Ft. Dia. $1.59

• *Add 10% for handling & postage. Calif. res. please add sales tax.*

WAR ASSETS DIV. Volume Sales Co.
Dept. S-2-53, 3930 Sunset Blvd. Los Angeles 29, Calif.

Crosman Pistol...for accuracy



at dealers everywhere

GAS POWERED
Low Cost Shooting
indoors or out

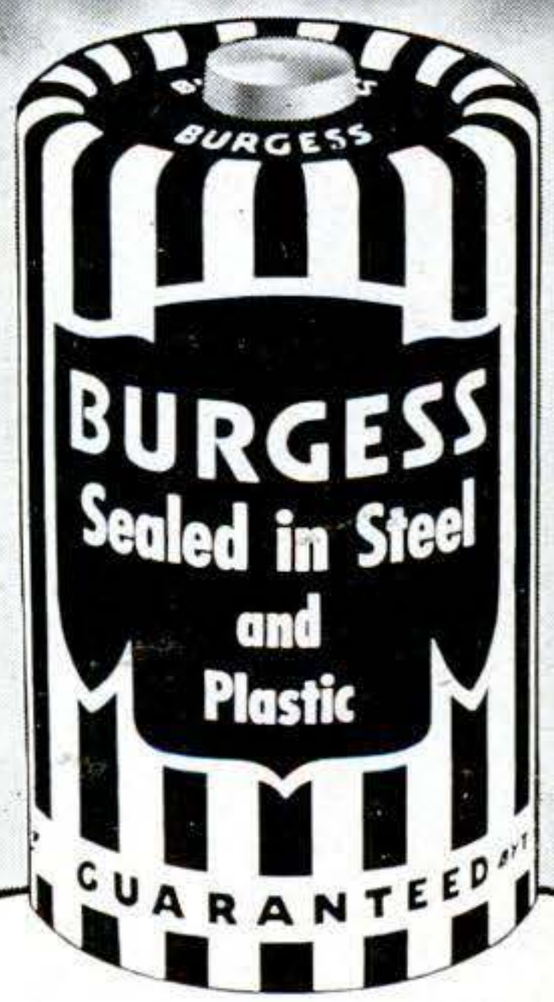
CROSMAN ARMS CO., Dept. 46
Rochester 20, N. Y.

more fishing fun!
LESS MAINTENANCE ...
STARCRAFT

ENJOY years of fishing in a safe, easy-to-handle *Starcraft Boat.* Rugged, lightweight construction of *magnesium, aluminum, stainless or galvanized steel.* Low prices. Every desirable feature. Write for free catalog today. Dept. DD-2.

STAR METAL BOAT CO. • GOSHEN, IND.

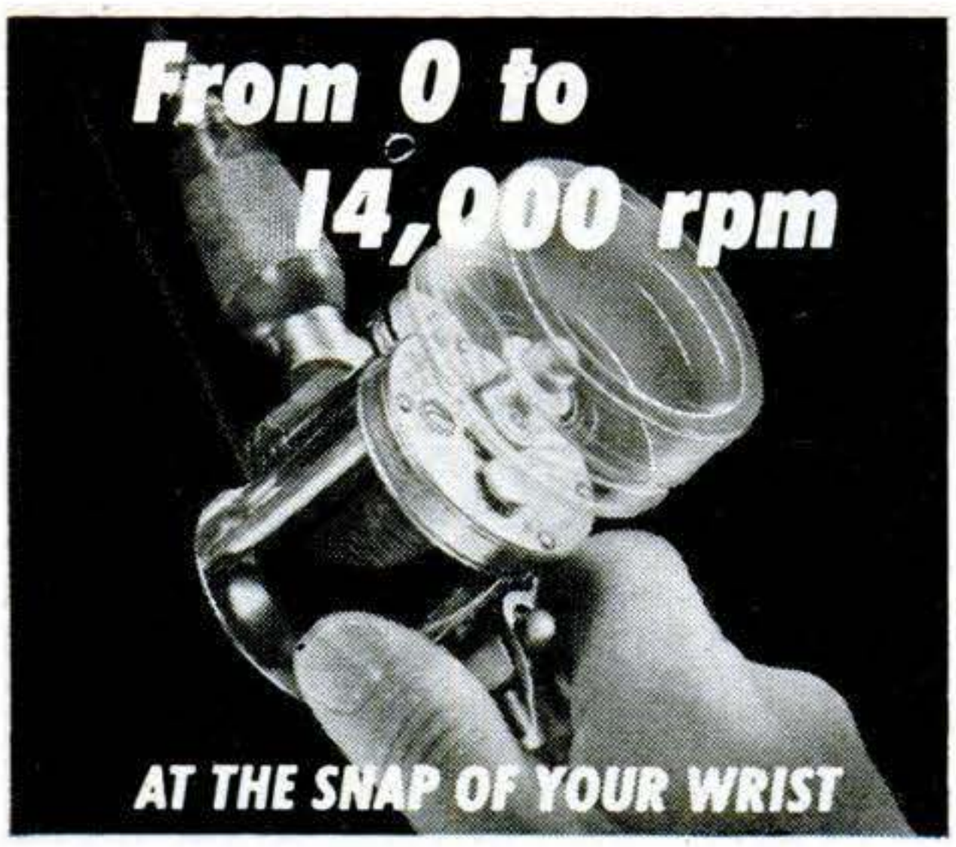
For Discriminating Users



Scientists, explorers and engineers choose Burgess Batteries where lives depend on battery power, because they are recognized as best by the experts. Insist on using Burgess Batteries in your flashlight. Burgess Battery Company, Freeport, Ill.; Niagara Falls, Can.

A Quality Dry Battery For Every Purpose

Copyrighted material



with a PFLUEGER REEL

Ever think how fast a bait travels through the air? Shooting out 80 to 100 feet in two seconds means peak speeds up to 40 miles per hour. And the spool that feeds out line turns up to 14,000 revolutions per minute!

Pflueger Reels are built to last—by the third generation of trained craftsmen. Pflueger Reels, from $2.10 to $35.00, mean better fishing. Ask your dealer.

THE ENTERPRISE MFG. CO., AKRON, OHIO
88 years making fishing tackle

PFLUEGER
(Pronounced "FLEW-GER")
A GREAT NAME IN TACKLE

Do you work all day with COLD FEET?

NOW,

at last, a new, modern, low priced electric foot warmer that will keep you healthy, happy and comfortable

Help prevent colds with ... ELECTRO MAT

Check stand cashiers, secretaries, assembly line workers, housewives, office workers, theatre cashiers, machine operators, telephone operators, and many others throughout the country are now singing the praises of the Electro Mat. There is no further need to work all day with cold feet. Many colds, causing absenteeism and irritability, can be directly traced to cold feet.

Be Comfortable, Happy and Healthy on Your Job During Cold Winter Months.

Consumes less power than a 75 watt light Bulb.

Mail your check or money order today for ONLY

$6.95
F.O.B. Factory

Send for your light-weight, portable Electro Mat today. Made of Quality Neoprene Rubber. Size 14" x 21".

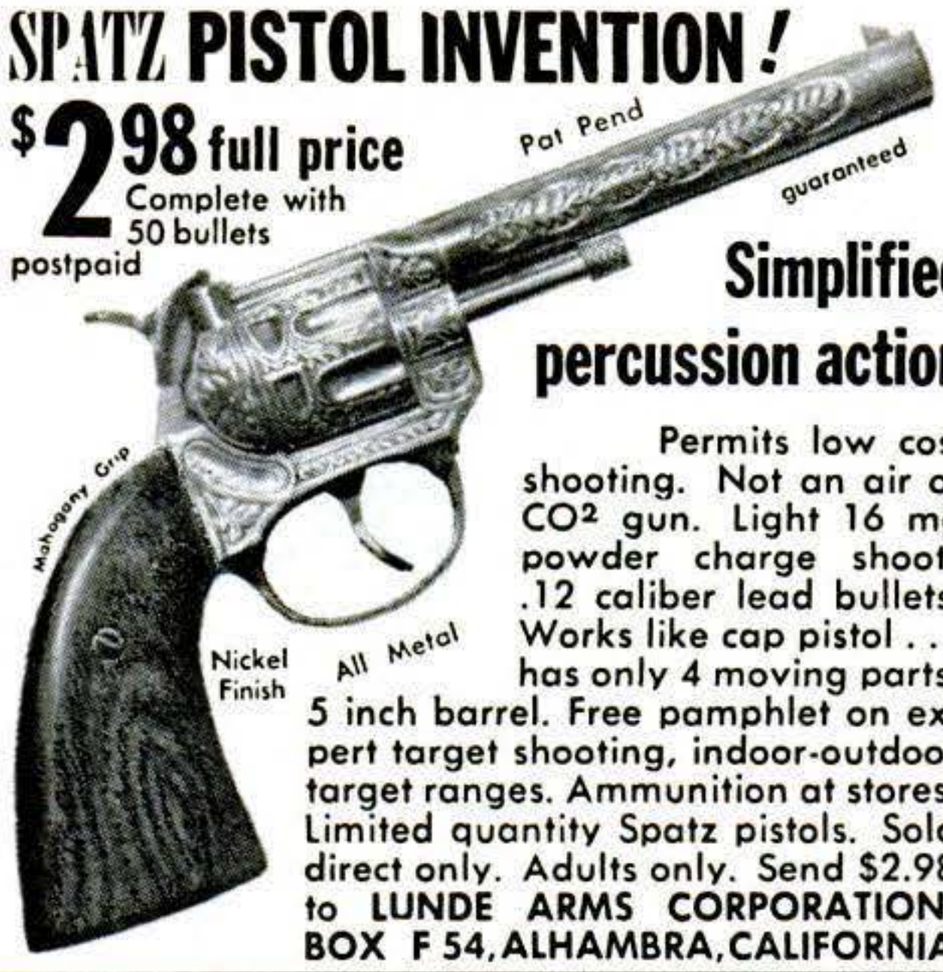
You will agree it is the best investment you have ever made.

Safe and Economical

PETERSON RUBBER MAT CO.
5508 N. Halifax Arcadia, California

SPATZ PISTOL INVENTION!

$2.98 full price Complete with 50 bullets postpaid



Simplified percussion action

Permits low cost shooting. Not an air or CO^2 gun. Light 16 mg powder charge shoots .12 caliber lead bullets. Works like cap pistol . . . has only 4 moving parts. 5 inch barrel. Free pamphlet on expert target shooting, indoor-outdoor target ranges. Ammunition at stores. Limited quantity Spatz pistols. Sold direct only. Adults only. Send $2.98 to LUNDE ARMS CORPORATION, BOX F 54, ALHAMBRA, CALIFORNIA

NEW BOW DEVELOPMENT! $12.95 post paid

faster - smoother - more accurate

OUT-SHOOT $30 BOWS! Hunting, target. Scientifically designed by a large manufacturer to give uniform perfection at low cost. Extreme durability—won't split. Rawhide bound leather grip. Unusual bargain. Limited quantity.

Superior to any known wood. Light spring aluminum steel alloy gives extraordinary thrust. Unusually flat trajectory gives you more accuracy. Registered 50 lb. pull. Efficient recurve tips. Professional bow.

MONEY BACK IF NOT SATISFIED. Send 12.95 to TECHRITE CORP, Box 12L, South Pasadena, Calif.

PORTABLE GARAGE

Plastic Vinyl **$6.75**

USE IT ANYWHERE

• Folds compactly • Keeps rain, snow, dust, salt air, sun or sleet away • Protects your car's finish • Durably constructed of vinyl plastic • Springtite elasticized bottom, holds securely in all kinds of weather • Fits all makes • Direct from manufacturer • Enclose check or money order for 6.75, or sent C.O.D. 10-day Money Back Guarantee. MARDO SALES CORP., 480 Lexington Ave., Dept. G-682, New York 17, N.Y.

BOAT KITS

12 ft. model pictured

- Use simple tools to assemble
- Step-by-step instructions
- Precision pre-shaped parts
- One-piece plywood planking
- Screws, paint included

Marine hardware & complete accessories

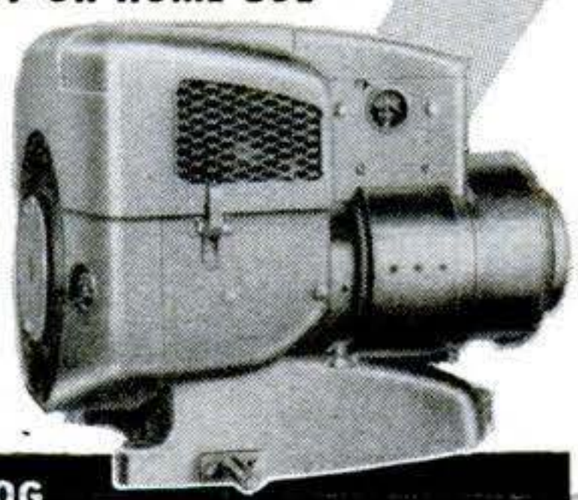
New Catalog of all models 10c

LUGER INDUSTRIES Marine Division 3207 FREMONT AVE. SO. MINNEAPOLIS 8, MINN.

ELECTRICITY *Anywhere*

FOR PORTABLE, EMERGENCY OR HOME USE

ONAN Electric Plants generate 110-volt, 60-cycle current for homes, farms, cabins and resorts beyond the highline. Lightweight, portable plants cut costs, speed work for contractors. Standby plants protect hospitals, homes, civil defense units against power failure. 400 to 55,000 watts. Gasoline or Diesel-powered. Priced from $219.00.



WRITE FOR CATALOG

D. W. ONAN & SONS INC.
6748 UNIV. AVE., S. E., MINNEAPOLIS 14, MINNESOTA

Copyrighted material

Your guardians of quality in radio, television and recorded music

When you see these trade marks on television sets, radios, "Victrola" phonographs, and other electronic instruments you are assured the highest quality—born of research, fine engineering and craftsmanship.

The sun never sets on these trade marks, and millions of people around the world turn to them with friendly confidence.

RCA, as the pioneer, continues to lead in every major advance . . . in all phases of TV.

RCA Victor has made radio a household word to millions. "Victrola" phonographs have moved music from concert halls to homes . . . from Broadway to Every Street, U.S.A.

You also see these trade marks on records so rich in "living presence" that artists seem to be performing in your home.

Little Nipper and the familiar phrase "His Master's Voice" have appeared on recordings made by the greatest artists in the world—for more than half a century . . .

These same high standards of quality make NBC the nation's leader in radio and television broadcasting. You can depend on RCA and RCA Victor trade marks as *guardians of quality*—the sure guides to finer performance, greater dependability, better value and service.

Tmks. ®

RADIO CORPORATION OF AMERICA

World leader in radio—first in television

Copyrighted material

FOR 1953...

A New KING-SIZE Value

IN OUTBOARD MOTORS

Johnson Sea-Horse 10

$275.00 F. O. B. FACTORY

Johnson presents a new king-size value to outboard motoring — the brilliant Sea-Horse 10, WITH Gear Shift, WITH Mile-Master Fuel Tank, WITH Synchro Twist-Grip Speed Control, AND specially engineered for Johnson's new Ship-Master Remote Control. Here is power to breathe new life into your boat—the last word in fine outboard engines. All at a price that only Johnson's outstanding production makes possible . . .

FOR 1953 — FOUR GREAT ALTERNATE FIRING TWINS

SEA-HORSE 3—3 H.P. Only 31 lbs.! Amazing Angle-matic Drive. Goes where others dare not venture! **$145.00***

SEA-HORSE 5—5 H.P. Neutral Clutch. No shear pin. World's biggest seller! **187.50***

SEA-HORSE 10—10 H.P. Gear Shift. Mile-Master. Synchro Twist-Grip Speed Control. Brilliant acceleration! **275.00***

SEA-HORSE 25—25 H.P. Gear Shift. Mile-Master. Synchro Twist-Grip Speed Control. Speeds over 30 mph! **390.00***

All hp ratings OBC Certified brake hp at 4000 rpm.
**All prices f.o.b. factory, subject to change without notice.*

Johnson SEA-HORSES FOR DEPENDABILITY

Free Catalog: Full details on the 4 great Sea-Horses for 1953. Send for it! . . . See your Johnson dealer. Look for his name under "Outboard Motors" in your classified phone book.

JOHNSON MOTORS, 500 Pershing Road, Waukegan, Ill.
In Canada: Mfd. by Johnson Motors, Peterborough

THE ONLY MANUFACTURER WHO HAS BUILT A MILLION OUTBOARD MOTORS

BETTER PRODUCTION FACILITIES ...BETTER VALUE

Copyrighted material

HERE'S YOUR Check List OF 1953 CARS

MAKE & MODEL (4-dr. sedan unless otherwise specified)	OVERDRIVE	AUTOMATIC TRANSMISSION	POWER BRAKES	POWER STEERING	AIR CONDITIONING	HORSEPOWER	CURB WEIGHT	WEIGHT PER HP.	TYPE OF ENGINE	VALVE ARRANGEMENT	BORE AND STROKE	PISTON DISPLACEMENT (Cubic Inches)	COMPRESSION RATIO (:1)	PISTON TRAVEL (feet per mile)	STEERING RATIO (:1)	WHEELBASE	FUEL	PICTURES AND FURTHER DETAILS IN POPULAR SCIENCE MONTHLY
BUICK Roadmaster		√	√	√	√	188	4,089	21.75	V-8	OHV	4 x 3-13/64	322	8.5	1,396a	21.3p	125.5	Prem.	Feb. '53
CADILLAC 62		√†	√	√	√	210	4,364	20.8	V-8	OHV	3-13/16 x 3-5/8	331	8.25	1,328a	25.4p	126	Prem.	Feb. '53
CHEVROLET Bel Air		√		√		115	3,515	30.5	6	OHV	3-9/16 x 3-15/16	235	7.5	1,742a	17.4p	115	Reg.	Feb. '53
CHEVROLET Standard						108	3,250	30	6	OHV	3-9/16 x 3-15/16	235	7.1	1,816	19.4	115	Reg.	Feb. '53
CHRYSLER Custom Imp.		√†	√	√	√	180	4,425	24.58	V-8	OHV	3-13/16 x 3-5/8	331.1	7.5	1,573a	16.2p	133.5	Reg.	Nov. '52
DE SOTO 8	√	√	√	√	√	160	3,705	23.15	V-8	OHV	3-5/8 x 3-11/32	276.1	7.1	1,463a	16.2p	125.5	Reg.	Dec. '52
DODGE Coronet 8*	√	√				140	3,530	25.2	V-8	OHV	3-7/16 x 3-1/4	241.4	7.1	1,408a	22.2	119	Reg.	Nov. '52
FORD 8	√	√				110	3,193s	29	V-8	L-head	3-7/32 x 3-3/4	239.4	7.2	1,558a	26.3	115	Reg.	Jan. '53
FORD 6	√	√				101	3,115s	30.8	6	OHV	3-9/16 x 3-39/64	215.3	7	1,762	26.3	115	Reg.	Jan. '53
HENRY J Corsair (2-dr.)	√					80	2,556	31.9	6	L-head	3-1/8 x 3-1/2	161	7	1,890	24	100	Reg.	Nov. '52
HUDSON Hornet	√	√				145	3,750	25.8	6	L-head	3-13/16 x 4-1/2	308	7.2	1,690a	25.6	124	Reg.	Feb. '53
KAISER	√	√				118	3,220	28	6	L-head	3-5/16 x 4-3/8	226.2	7.3	1,915a	25	118.5	Reg.	Nov. '52
LINCOLN Cosmopolitan		√	√	√		205	4,262	20.79	V-8	OHV	3-13/16 x 3-1/2	317.5	8	1,379a	21.3p	123	Prem.	Jan. '53
MERCURY	√	√				125	3,485s	27	V-8	L-head	3-7/32 x 4	255.4	7.2	1,624a	26.4	118	Reg.	Jan. '53
NASH Ambassador	√	√		√		120	3,525	29.4	6	OHV	3-1/2 x 4-3/8	252.6	7.3	1,668a	20p	121.25	Reg.	Feb. '53
OLDSMOBILE Super 88		√	√	√	√	165	3,704	22.45	V-8	OHV	3-3/4 x 3-7/16	303.7	8	1,329a	21.3p	120	Prem.	Feb. '53
PACKARD Patrician		√†	√	√		175	4,125	23.6	8	L-head	3-1/2 x 4-1/4	327	7.8	1,795a	22.5p	127	Prem.	Dec. '52
PLYMOUTH	√					100	3,170	31.7	6	L-head	3-1/4 x 4-3/8	217.8	7.1	2,040	21.1	114	Reg.	Dec. '52
PONTIAC 8		√		√		122	3,596	29.4	8	L-head	3-3/8 x 3-3/4	268.4	7.7	1,418a	26p	122	Prem.	Jan. '53
STUDEBAKER Commander	√	√		√		120	3,306	27.5	V-8	OHV	3-3/8 x 3-1/4	232.6	7.5	1,417a	20p	116.5	Reg.	Feb. '53
WILLYS Aero Lark	√					75	2,847s	37.9	6	F-head	3-1/8 x 3-1/2	161	6.9	2,101	23.7	108	Reg.	Jan. '53

(*) Hard top (†) Standard on this model (s) Shipping weight (a) With automatic transmission (p) With power steering

Copyrighted material

POPULAR SCIENCE
REG. U. S. PAT. OFF. Monthly

Cars in the News

AS DETROIT'S annual automobile fashion show hit its peak last month, seven more manufacturers unveiled their 1953 models.

Four are pictured in full color on these pages. The others are described elsewhere in this issue.

The Studebaker is unique. It's the only car in the world with *mechanical* power steering.

The all-new automobile at the right is Hudson's entry in the Ford-Chevrolet-Plymouth price class. Called the Hudson Jet, it seats six. It will be obtainable with an aluminum head and twin carburetors that increase horsepower. It's no poor re-

STUDEBAKER for '53 has that low, sloping-hood continental look. Clutches control the power steering.

HUDSON unveils the new Jet, a 2,800-pounder of less weight per horsepower than any other low-price car.

Copyrighted material

CADILLAC boasts the highest horsepower plus optional air conditioning for hot summer weather.

NASH goes farther between fuelings now. A new front-end coil suspension gives a much softer ride.

lation to the other cars in the Hudson line—it develops more than 100 horsepower and with the special head has a compression ratio of 8 to 1.

Hudson also offers the Hornet, top money winner in stock-car races, the Wasp and a new Super Wasp. An aluminum head is standard on the Hornet, optional on the Wasp and Super Wasp.

The Cadillac is unique in its way, too. It's the world's most powerful motor car in mass production: 210 horsepower. The Lincoln—described in January—and Cadillac are in a nose-and-head race for top horsepower. A number of changes have gone into the improvement of the Cadillac engine. Its compression ratio is up from 7.5 to 1 to 8.25. Both valve timing and "lift," together with the shape of the combustion chamber, are modified.

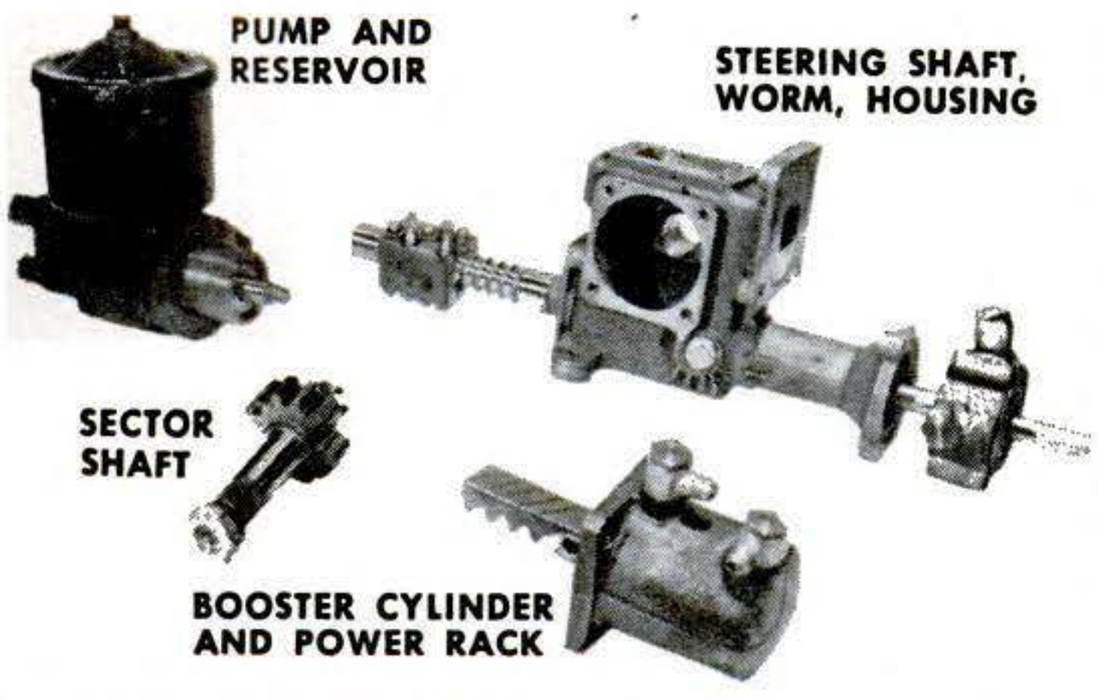
Nash isn't lagging when it comes to horsepower, either. Its new Ambassador and Statesman have moved into fresh company. The Statesman is up from 88 to 100 horsepower. More miles per gallon come from a higher compression ratio and a four-barrel carburetor. The car is zippier on acceleration and has oomph for passing. For the Ambassador, an optional special engine adds 20 horsepower to the standard 120. It offers power steering, too.

Copyrighted material

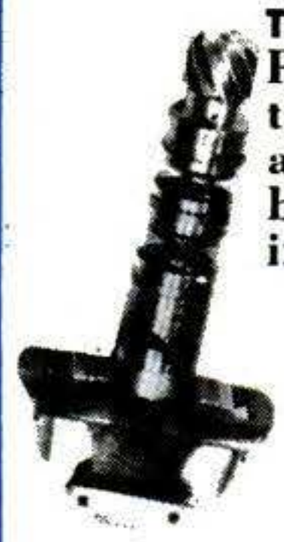
WILBUR SHAW REPORTS FROM THE DRIVER'S SEAT

Standing still, the Chevvy's front wheels can be turned with thumb and forefinger. The steer-

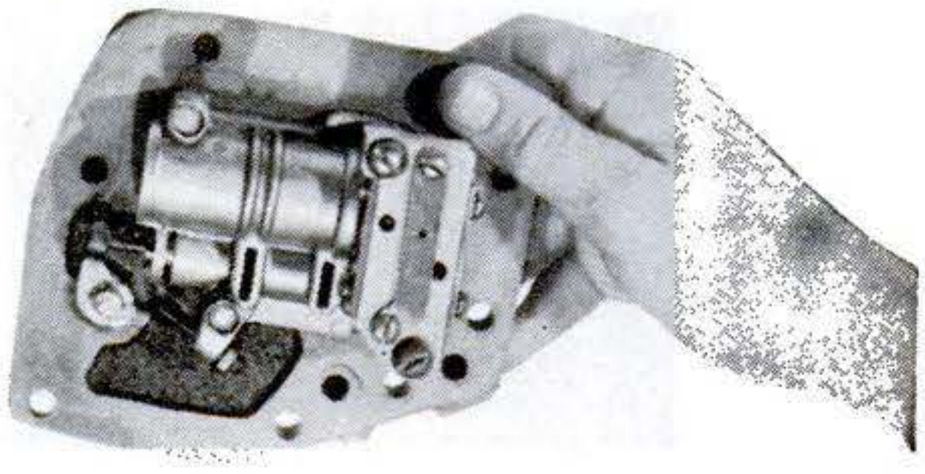
Chevrolet Gets



HERE ARE THE FOUR elements of Chevvy's power steering, one of four big news items for '53.



THESE HAVE BEEN ADDED to the Powerglide transmission to give the car its new sass—a governor, at the left, and a throttle-valve body. They control the up-shifting and down-shifting.



Copyrighted material

ing-wheel "rim pull" is only seven pounds.

High-compression engine burns ordinary gas. New transmission gives a jack-rabbit take-off.

By Wilbur Shaw
PSM PHOTOS BY W. W. MORRIS

WHILE most of us were clacking our molars about the heat last summer, an ordinary-looking car with an ordinary-looking driver was making a secret run up Pikes Peak.

They started up in Colorado's pleasant summer temperatures. In the cold, thin air at the top, the driver was glad to don a coat. But his engine, packing a high compression ratio for a light car, buzzed right along on nonpremium gasoline.

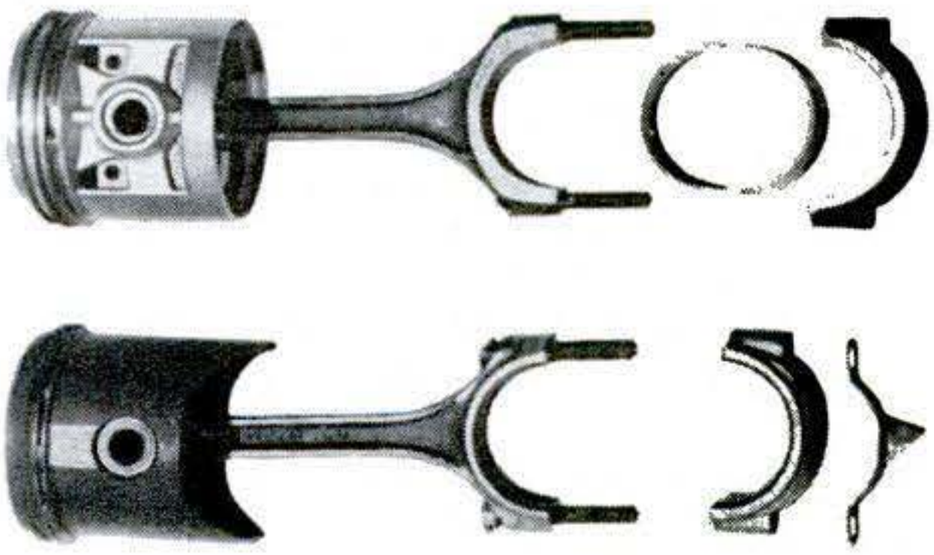
The driver was a testing engineer for Chevrolet, and his mount was a '53 car camouflaged with a '52 body.

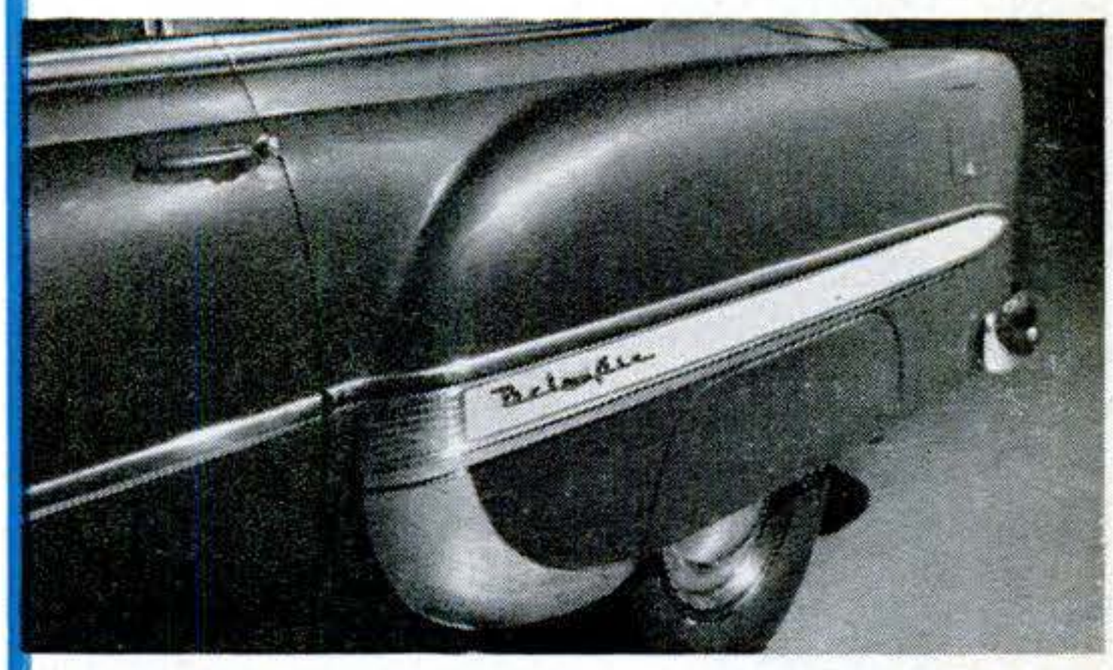
He had an improved engine—and a lot more, for the new Chevvy has:

- Power steering, as an extra.
- A vastly improved transmission.
- Better brakes.
- Switch-key starting.
- And a complete job of restyling, with

Power Steering

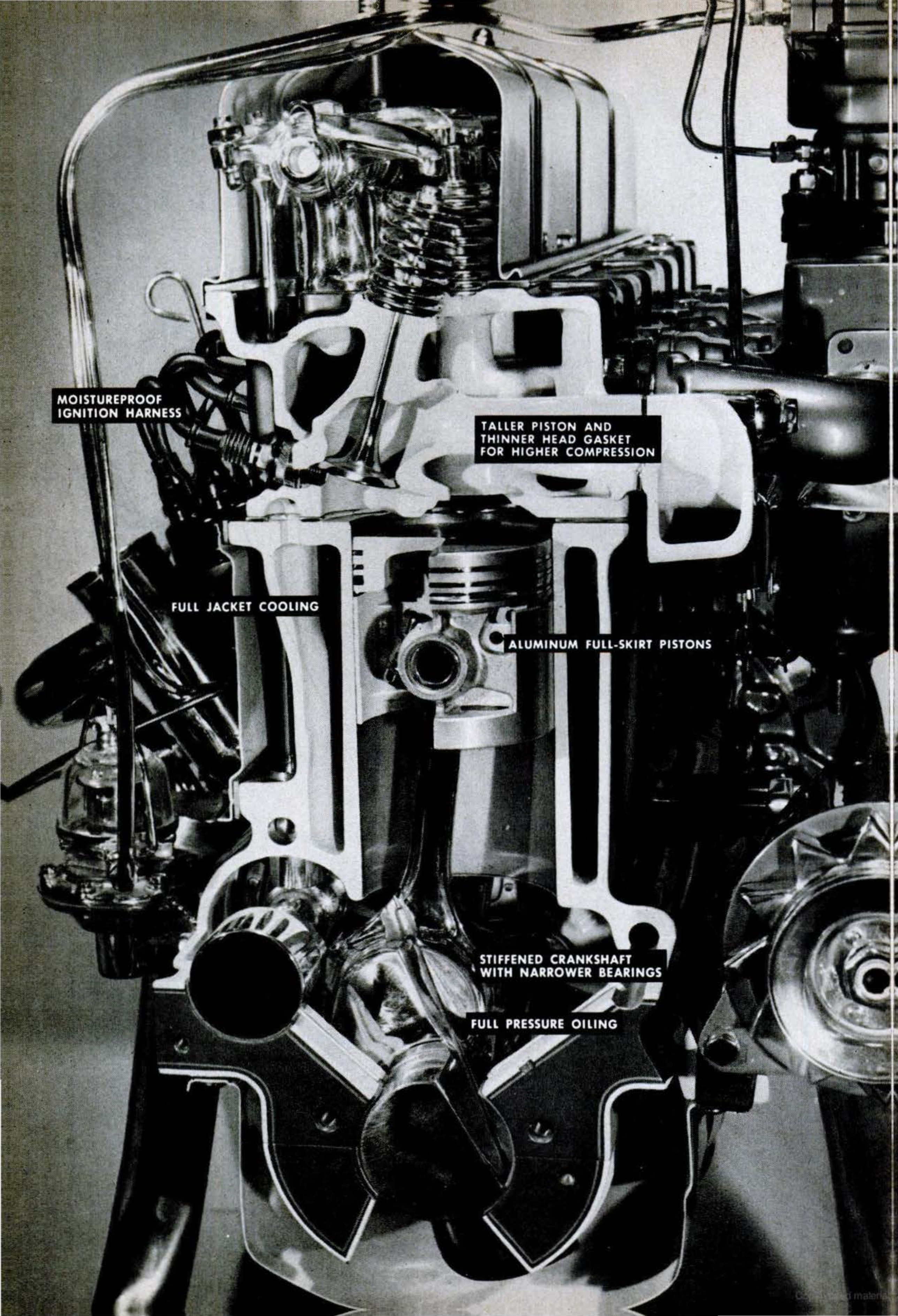
NEW ALUMINUM PISTON, with new insert rod bearings, is shown at the top. Old cast-iron job is at the bottom. Note the little triangular bucket to splash oil.

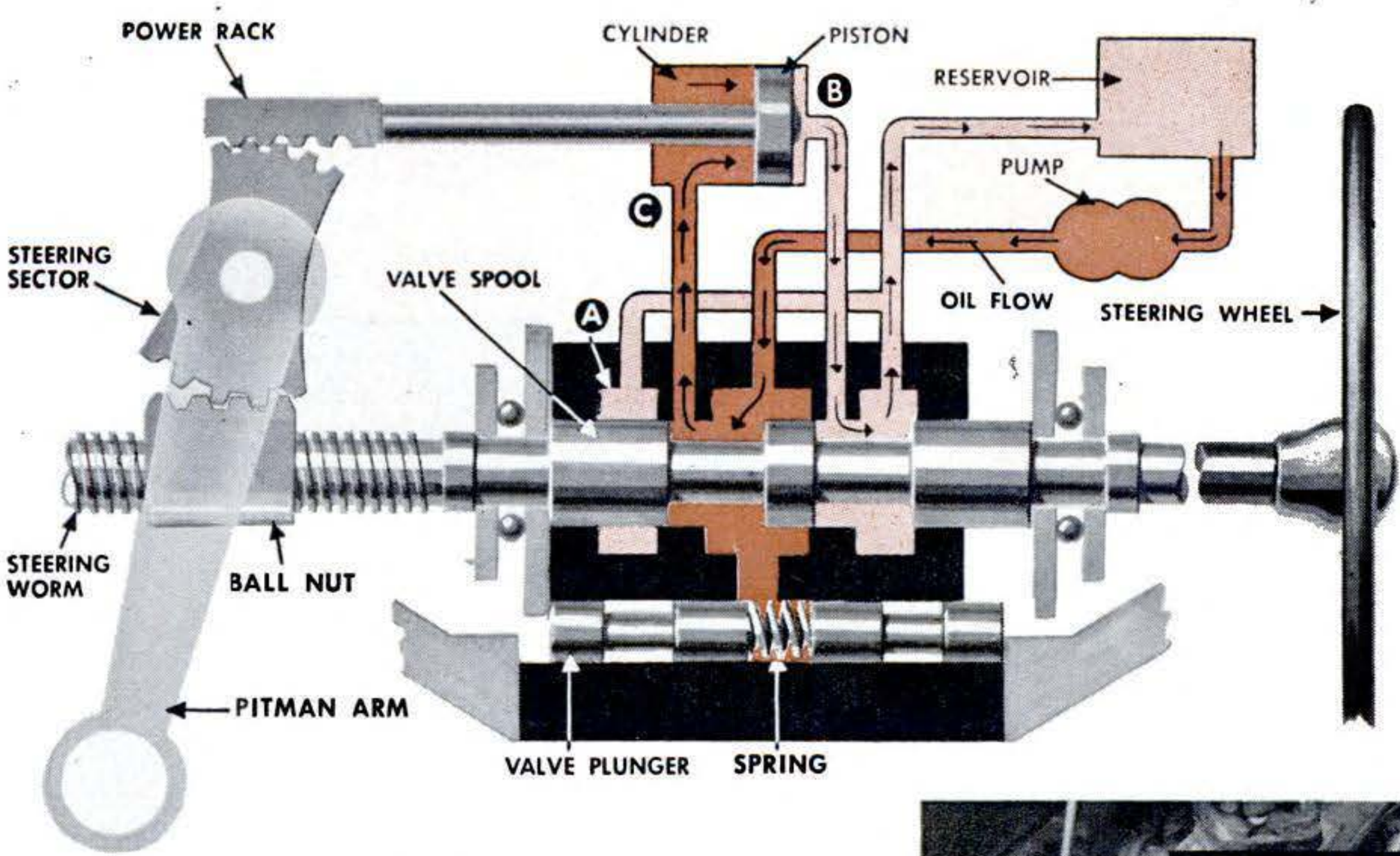


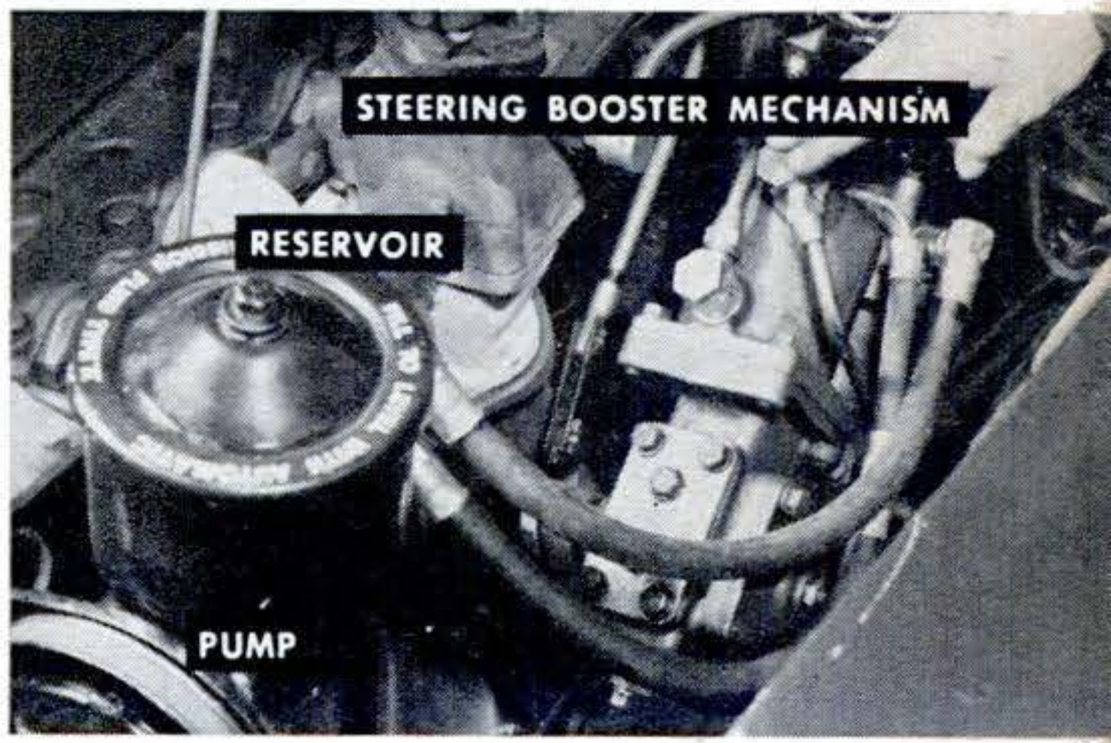


CHEVROLET'S NEW LINE of cars—the Bel Air—carries this strip on the rear fender.

Copyrighted material


MOISTUREPROOF IGNITION HARNESS
TALLER PISTON AND THINNER HEAD GASKET FOR HIGHER COMPRESSION
FULL JACKET COOLING
ALUMINUM FULL-SKIRT PISTONS
STIFFENED CRANKSHAFT WITH NARROWER BEARINGS
FULL PRESSURE OILING





HEART OF POWER STEERING is a valve spool grooved to open and close ports in a pressure hydraulic system. In the diagram above, heavy colored areas indicate oil under pressure from the pump. Light areas show static oil and oil being returned to the reservoir. The steering wheel has been turned to the left. The steering worm, threaded through a ball nut, has moved the valve spool to the right. This has closed port A, forbidding a return flow of oil to the reservoir through that passage, and port B, shutting off the flow of high-pressure oil to the right side of the cylinder. Pressure from the pump is concentrated on port C to fill the left side of the cylinder and move the piston to the right. Oil is draining from the right side back to the reservoir. The piston rod has pulled on the steering sector to move the Pitman arm for a left turn. For a right turn, the spool moves in the opposite direction.

The spool's full travel left and right covers only .06 inch. The spring, one of five surrounding the spool, preloads the valve plunger, forcing a pull of at least three pounds on the steering-wheel rim before the hydraulic system goes into action. This gives a steering feel to the driver. The springs also help center the spool when the steering wheel is released.

The photo at the right shows the installation of the unit in a car.

a brand-new line of cars: last year's Bel Air model is now the Bel Air series.

Power steering is the biggest surprise package in the new Chevrolet. Power steering for the lighter family of American automobiles was perhaps inevitable. If Big Sister uses lipstick, then the bobby soxer can, too.

Like almost all of the other power-steering units that have appeared in the last two years, Chevvy's is hydraulic. The engine drives a pump. The pump creates pressure. The pressure, fed to a double-acting piston, helps turn the wheels.

CHANGES shown at left add up to practically a new engine. The old compression ratio was only 6.7 to 1, the new one 7.5 to 1. The horsepower output is up from 105 to 115.

Steering Is Faster

I was glad to find out that Chevrolet, smartly enough, had made the steering a little "faster." It doesn't take quite as much movement of the steering wheel to negotiate a turn. And that, as I've been preaching ever since power steering made its appearance, is the single biggest contribution to safe driving that easier steering can make.

I ought to know. Topping a hill into the teeth of an oncoming car a year ago, I used power steering to save my life and those of my wife and son. With slow

Copyrighted material

steering, I never could have swerved out of the way.

In everyday use, the lady of the house will like power steering most when parking. It gives her a steering wheel that turns at least five times easier while she's trying to maneuver into that dinky space at the curb. Making the wheel a full inch bigger—18 inches in diameter—helps, too.

First Change in 16 Years

But to many of us, the big news in the '53 Chevvy is that engine, which has undergone major surgery for the first time in 16 years.

Critics have said that the old Chevrolet engine was as up-to-date as red-flannel underwear. While everybody else in Detroit was adopting full-pressure oiling, it plodded right along with a splash lubrication system. It had cast-iron pistons. It had connecting-rod bearings sprayed with a permanent hot babbit. It had a cooling system that failed to circulate the water in the jackets during the warm-up period.

It may have been out-of-date, but a salesman friend of mine told me recently, that in 50,000 miles of driving, his Chevrolet had cost him a total of 35 cents for repair—that went for a windshield wiper blade. Which may explain why Chevvy was slow to change.

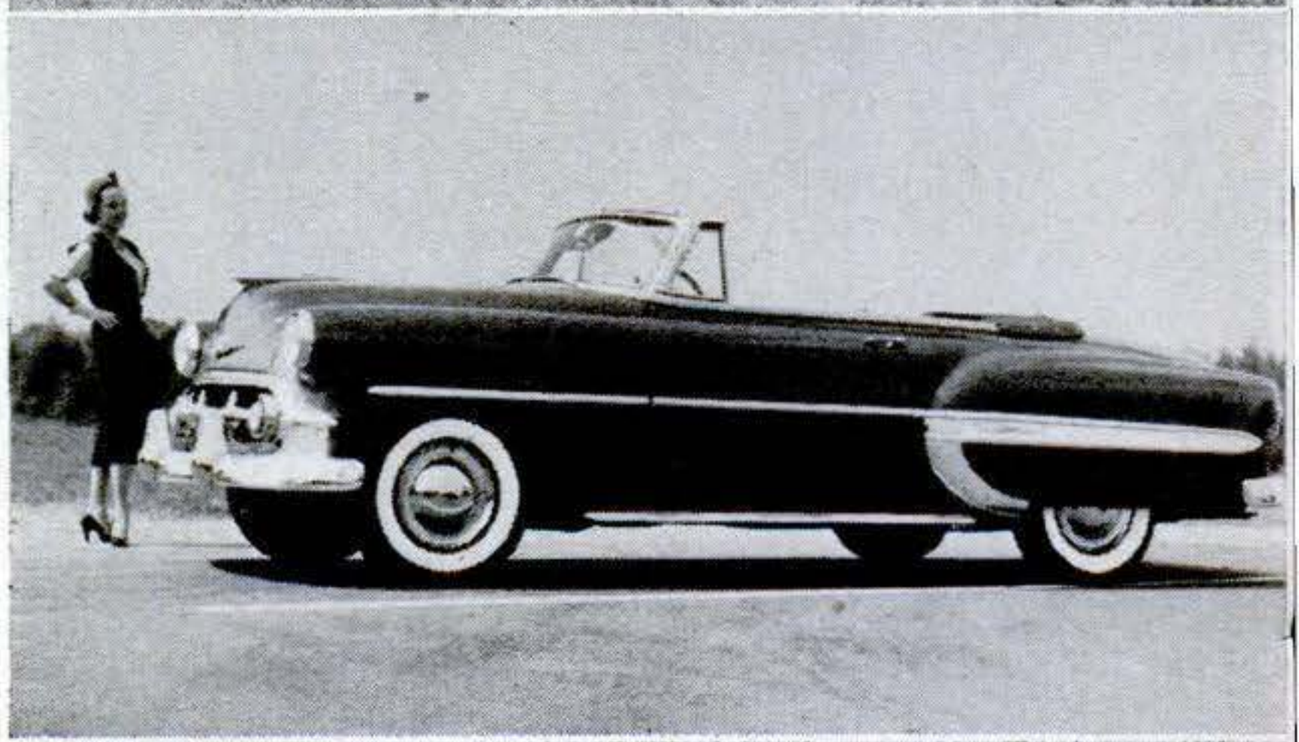
Compression Is Higher

The new engine—available only in Chevrolets with automatic transmissions—has a full-pressure lubrication system. It has replaceable inserts for the bearings. It has aluminum pistons. It has a stiffer crankshaft. It has a cooling system that bypasses the radiator during the warm-up but circulates water around the cylinders.

And, most important, it burns ordinary gas on a compression ratio of 7.5 to 1—up nearly a full point from last year.

Results: Power is higher. Fuel mileage is improved. The engine is steadier, quieter, smoother.

I felt that—and more—in my accelerator foot when I boarded a new Chevrolet, equipped with the new automatic transmission, at the General Motors' Proving Ground.

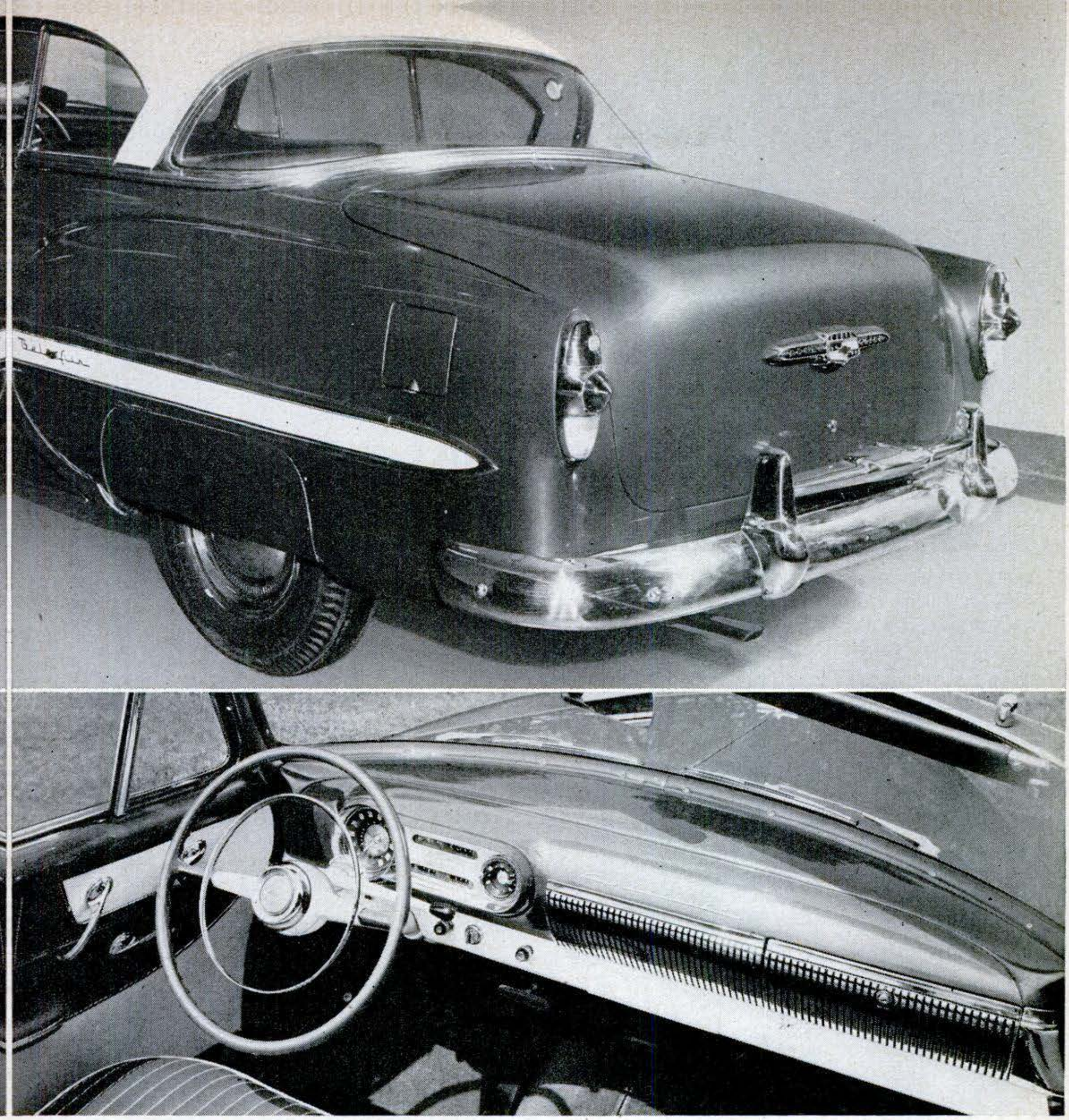


CHEVVY'S THREE LINES of cars for '53 include station wagon, convertible and sports coupe.

The car jumped when I stepped on the gas. I tried it again. From zero to 60 miles an hour took 19.6 seconds in Drive range. From 60 to 75 took 12½ seconds.

This was something new in Chevrolet performance. I checked that by driving a '52 Chevrolet against a stop watch. Zero to 60 in the older car took 25.9 seconds; 60 to 75, more than 15 seconds.

Copyrighted material



WRAP-AROUND REAR WINDOWS, high decks and combination tail lights are the chief changes in the rear. The panel includes switch-key starter. The windshields are one-piece.

The comparison on a 11.6-percent grade was even more startling. Starting at 10 miles an hour, the '52 car took almost 40 seconds to climb a distance of 1,400 feet. The new car did it in a bit over 31 seconds.

Gear Added to Converter

So the sluggishness in Chevrolet's Powerglide transmission has been cured. Ever since its introduction three years ago, Powerglide had required a start in Low range and a shift to Drive range for a fast getaway. The company knew this, of course. But it hesitated to make a change because it liked the extreme simplicity of that original transmission.

Now, for '53, the torque-converter transmission has been given an overhaul. To the gearbox behind it—common to all torque-converter transmissions to take care of emergency-low and reverse gears—have been added two items: a throttle

[Continued on page 272]

Copyrighted material

He's Talking Down an Airplane

THE airman above is guiding in a plane that has a curtain drawn over its cockpit to simulate bad weather. As the plane approaches the runway, the operator at the Ground Control Approach trainer instructs the pilot to center the plane in the sight. The pilot then makes a visual landing. Costing about $60 to build, the trainer prepares airmen to use costly GCA radar equipment that is installed at only a few fields. Lt. M. A. Fisher devised the system, shown in use at Perrin Air Force Base, Tex.

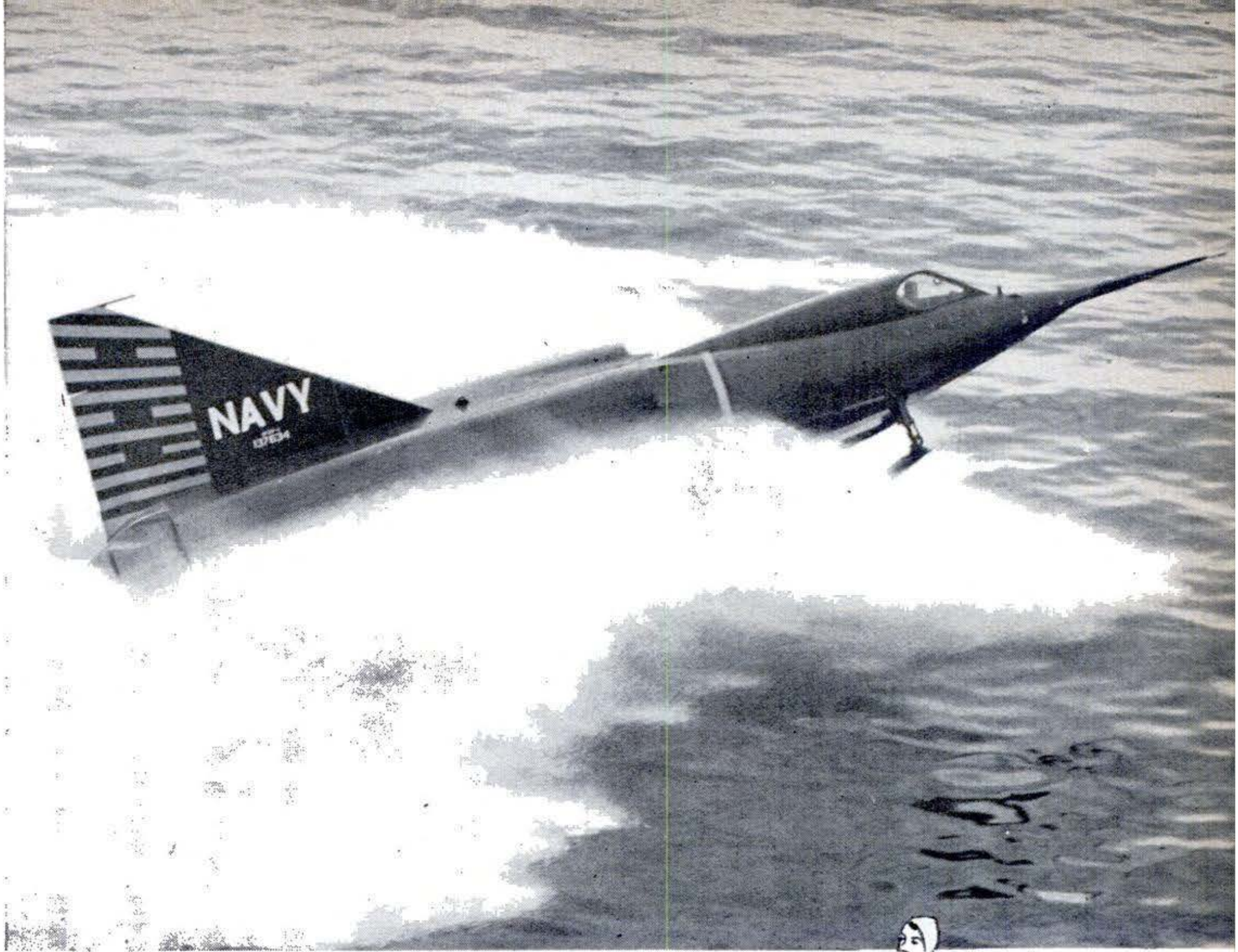
She's Trying Out a Thermotron

THIS blood donor is having her temperature taken electronically. . The nurse will get a reading in 4½ seconds—about 60 times faster than she could with an ordinary thermometer. Called the thermotron, the machine is an industrial temperature indicator adapted by Minneapolis-Honeywell engineers for measuring body temperatures.

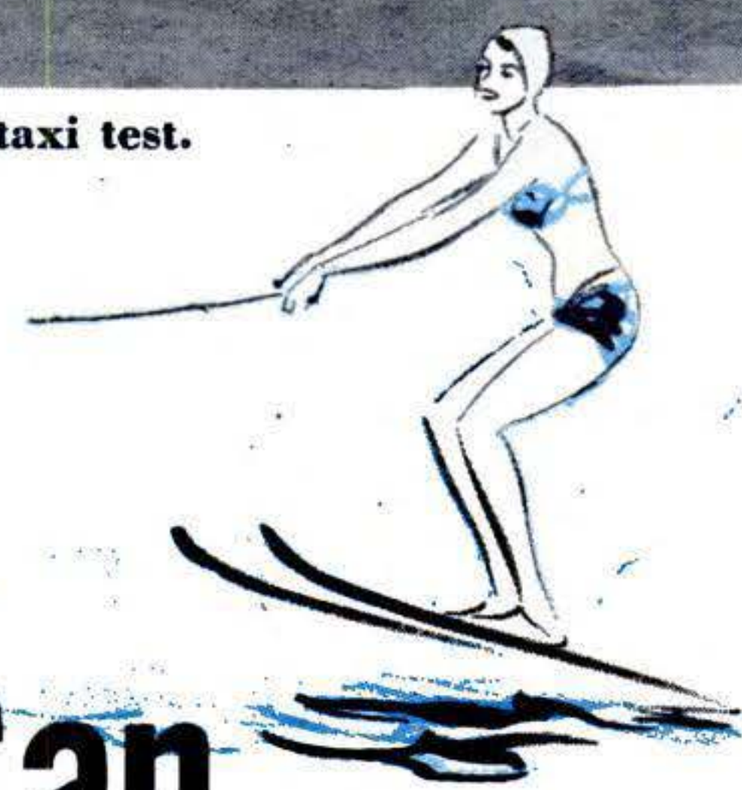
He's Building Bunker Furnaces

BECAUSE a hot war in Korea can also be plenty cold, Chief Warrant Officer Angelo Fabrize built himself a bunker heater from discarded mortar casings. It worked so well that M/Sgt. William W. Foot (above), shop foreman of the 702nd Ordnance Co. set GIs to turning out more of them. They'll burn wood, coal, oil or gas.

Copyrighted material



World's first hydro-ski jet fighter breaks water in taxi test.



A patch of water becomes a runway —ready-made and bombproof— for this new kind of seaplane.

Jets on Skis Can Use Oceans for Airfields

By Herbert O. Johansen

COULD a submarine refuel a supersonic jet fighter in mid-ocean? It sounds silly. How would you get the submarine up in the sky? Or the fighter down to the submarine?

A way to use the sea's vast surface as a field for a faster-than-sound fighter plane has been found now by the U. S. Navy. The plane is the Convair XF2Y. And the device that is expected to make the jet a seaplane—and possibly revolutionize aviation—is a thousand or more years old. It is a ski such as ancient Lapps used to skim over snow, and

Copyrighted material

How Hydro-Ski Jet Fighter Takes Off

OCEANS MAY BECOME RUNWAYS for supersonic hydro-ski jet fighters. Artist's conception above shows how such a plane might refuel from a submarine.

bathing beauties use right now to skim the waves behind speedboats in Florida.

The Convair XF2Y Sea Dart, shown on the preceding page trying out its hydro-ski gear during preflight tests in San Diego Bay, is a delta-wing, twin-jet job. It has no horizontal tail but a triangular-shaped vertical fin. When the plane is at rest on the water, the hydro-ski, projecting beneath the fuselage, is submerged. As the plane starts, the ski acts as a hydrofoil, giving underwater lift. Suddenly, it boosts the craft bodily out of the water, nose up. Then, as the hydro-ski itself breaks through the surface with a short burst of fine spray, it becomes a planing surface, supporting the airplane on the water as it accelerates to take off.

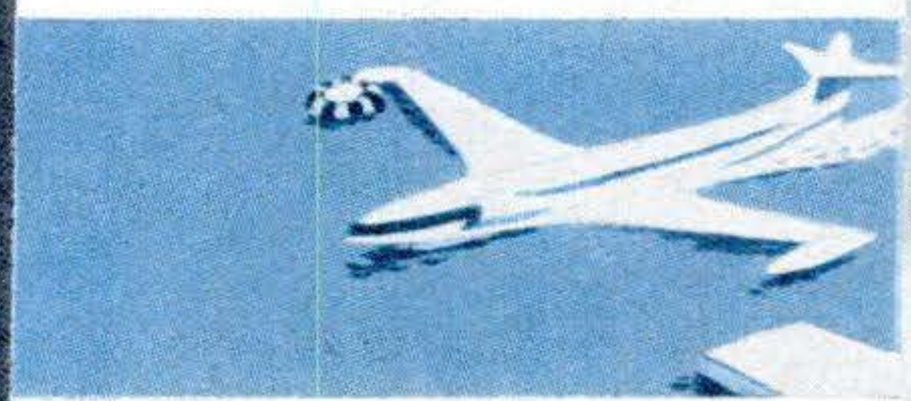
When the plane is airborne, the hydro-ski will be retracted, like the wheels beneath a landplane, to eliminate air drag in flight. For a landing, the hydro-ski will be lowered in flight. As it touches

Copyrighted material

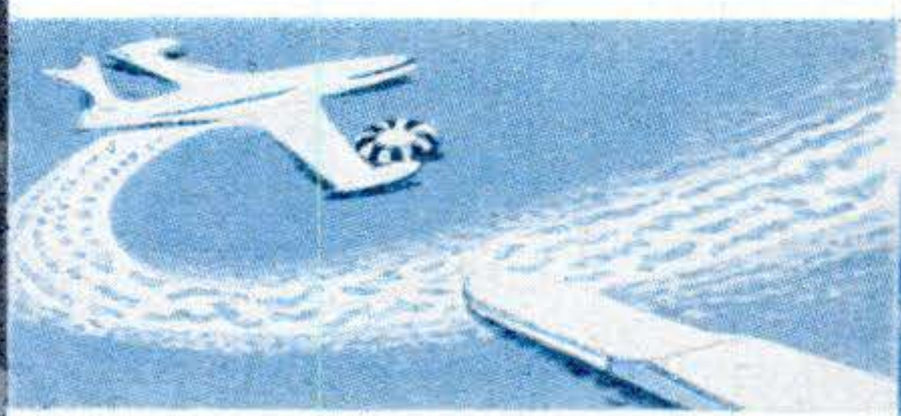
. . . SUPPORTS PLANE UNTIL IT IS AIRBORNE . . .

. . . THEN RETRACTS IN FLIGHT.

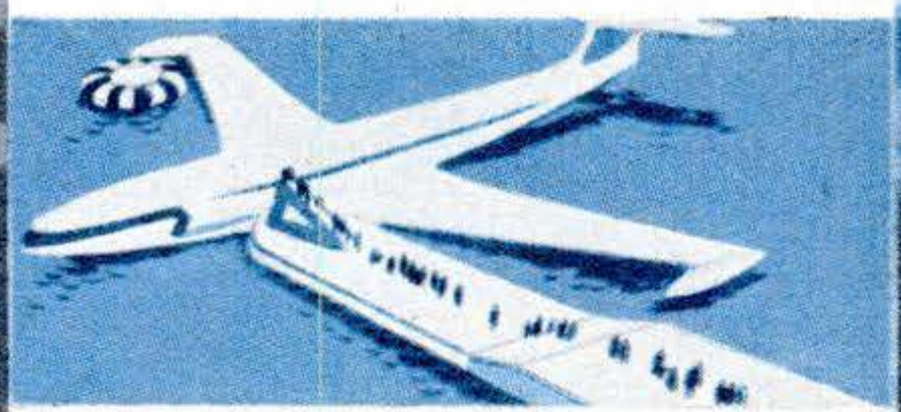
Berthing Hydro-Ski Airliner



WATER-TAXIING, plane noses one float wingtip into buoy.



AS IT SWINGS AROUND, slowing down, dock is extended.



COMPLETING CIRCLE, plane is moored, passengers disembark.

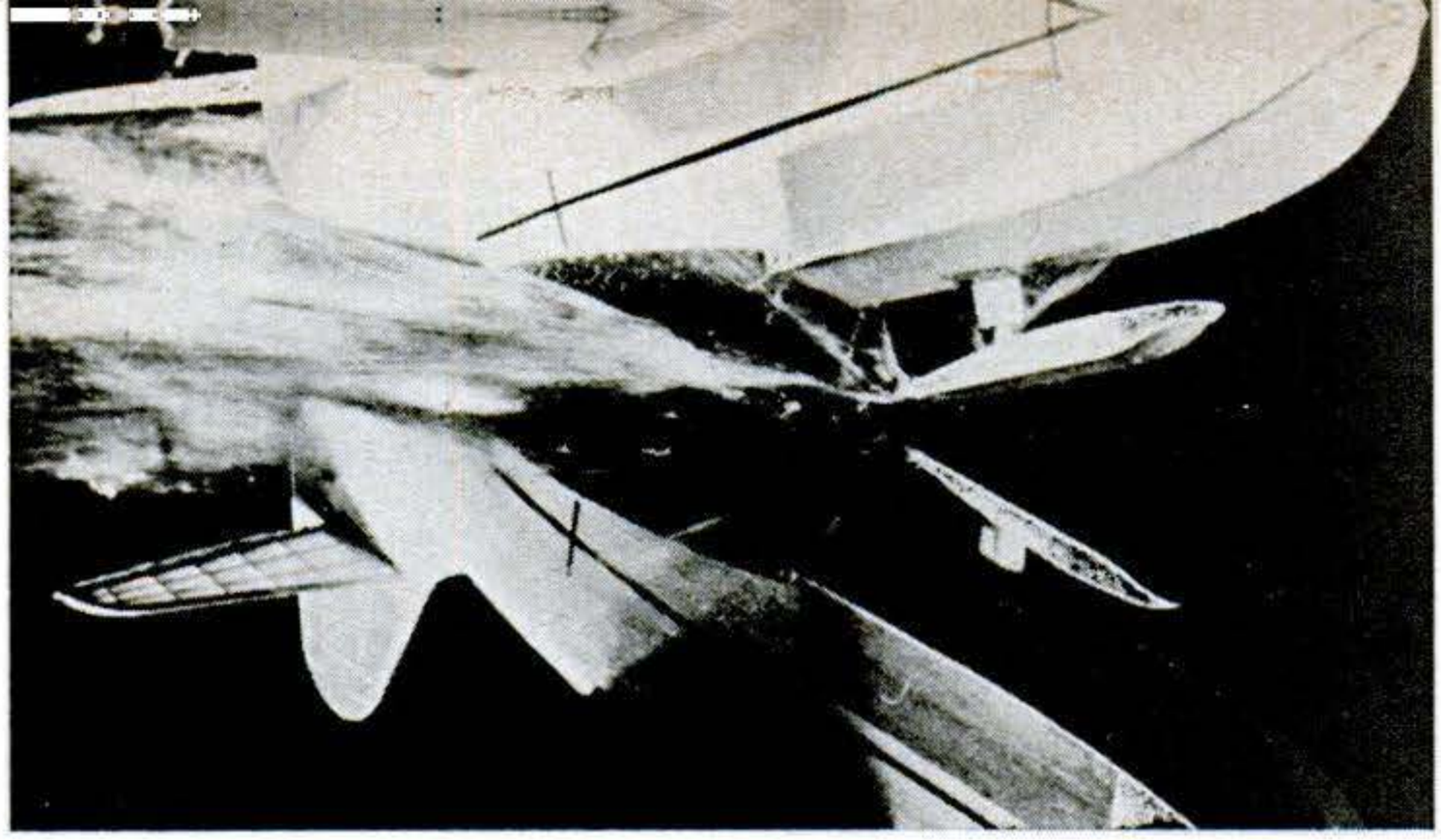
the water and the plane slows down, the ski will take on more and more of the load. And when the weight becomes too great, the ski will submerge, allowing the airplane to float on the water.

Glenn Curtiss built a flying boat 40 years ago. More recently, improved models carried transoceanic passengers. But land-based planes displaced the flying boats because they were faster. Now, jet engines make possible water-based planes without the bulky hulls which dragged the old flying boats out of the picture.

With jets, a high wing is no longer needed because there are no propellers to keep out of the water. A low wing can settle right down on the water and act as a float. The underside of the fuselage must be watertight, of course, but this is not a difficult requirement—and retractable wingtip floats can be added if needed.

Jets *and* hydro-skis have thus made a

Copyrighted material



TANK TESTS on models showed that hydro-skis give remarkable underwater lift. In photo at left, note small, fine spray as the ski breaks through water. Another result of these early NACA tests was proof that smooth landings at high speeds could be made in rough water. Fact that skis could be small enough to retract was an important factor in Navy's decision to build full-scale plane.

true, high-speed, water-based airplane feasible. The Navy will not abandon carriers or stop seizing islands in offensive campaigns. "Not yet anyway," officers insist. But the value of the hydro-ski fighter was indicated by John H. Floberg, Assistant Secretary of the Navy for Air, when he disclosed the existence of the XF2Y a few weeks ago. "Perhaps," Floberg said, "they could be based in forward areas where protected waters exist before land bases could be constructed . . . Thus, they might provide a means of ending to some extent the costly wartime program of building airstrips which are useful only for a short critical period."

Hydro-ski fighters, refueling from a small, fast ship or submarine, could use water airstrips that the enemy could not damage with bombs. The water would be as smooth a few minutes after the bombs fell as it was before.

Since these planes need no catapult for launching or deck runway for landing, submarines might become underwater aircraft carriers. Why not even a big, nuclear-powered submarine and atom-bomb-carrying ski planes? That combination could get right into the back yard of any enemy with a knockout punch.

Bush Pilots Tried It First

The Edo Corp. was the first to put hydro-skis on a full-size plane in an experimental project for the Air Force. Borrowing from the makeshift techniques of bush pilots who use skis to land on the lakes and snow in Canada and Alaska, Edo designed a small, twin-hydro-ski that will make any light landplane equally at home on water, ice, snow, bogs—or even grass.

Can hydro-skis also make water babies of the big commercial airliners? They certainly can when airliners have jet engines. And they would eliminate much airport congestion. Near most big cities are vast water runways whose length is measured in miles instead of thousands of feet. They cost nothing to build, nothing to maintain. And even if commercial jet seaplanes had to land some distance from a city, they could water-taxi to lake-, harbor- or river-front berths near the heart of the metropolis.

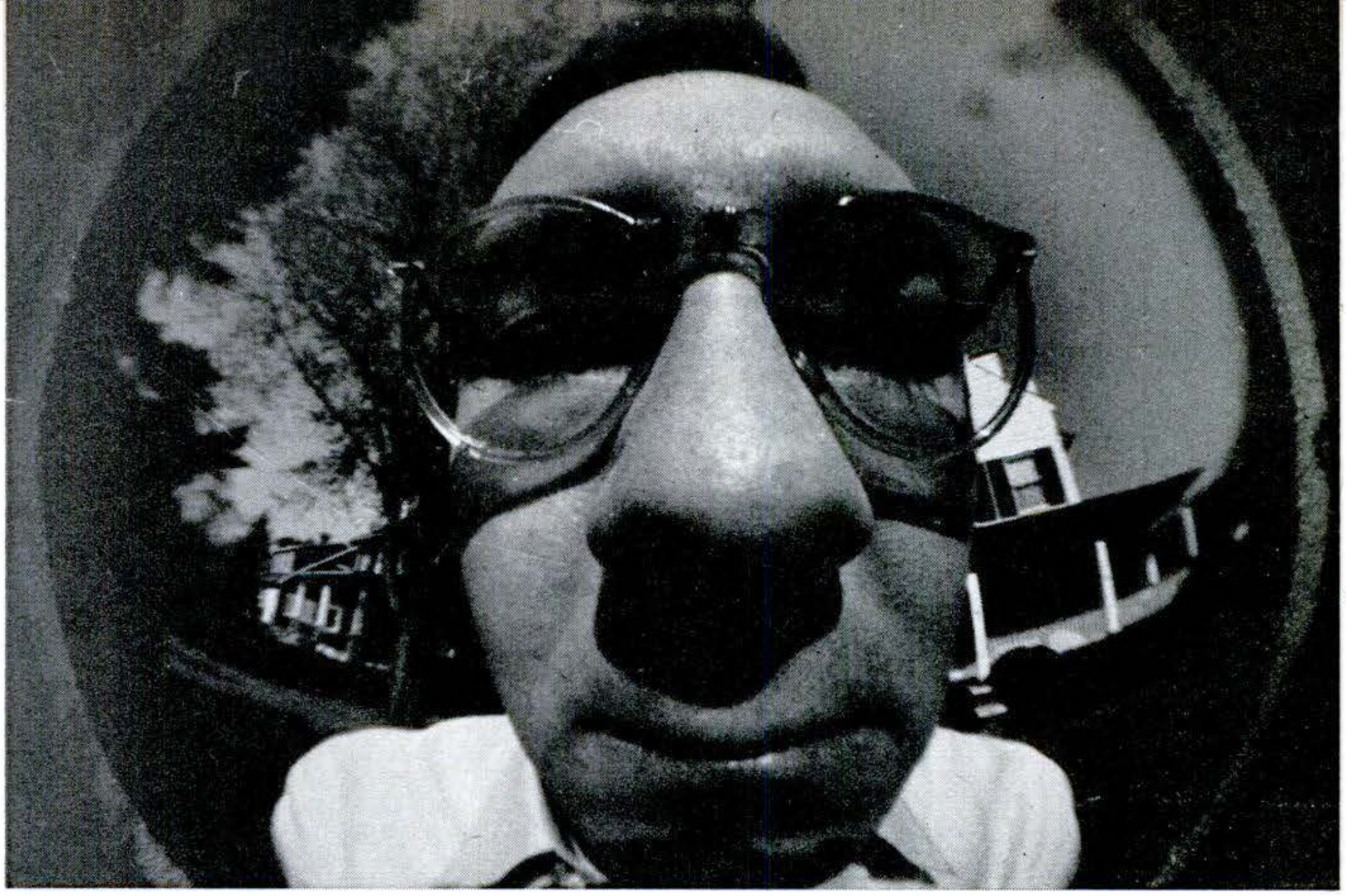
Jets Have to Be Strong

But how could such planes take the impact of water landings without strengthening that would add too much weight and bulk? Jets answered that. Their fuselages have to be strong enough to take water landings in order to withstand 600-mile-an-hour airspeeds. New light, strong metals have done the job.

But hydro-skis big enough to support a huge transatlantic airliner might cause prohibitive drag when under water, which is 800 times denser than air.

Hydro-ski enthusiasts say that this problem, too, can be solved. Another approach might be the "blended hull" developed by Ernest G. Stout, Consolidated Vultee engineer. It is highly efficient both on water and in the air. But the Navy has abandoned this "Skate" hull in favor of the hydro-ski for its first high-speed jet seaplane fighter. END

Copyrighted material



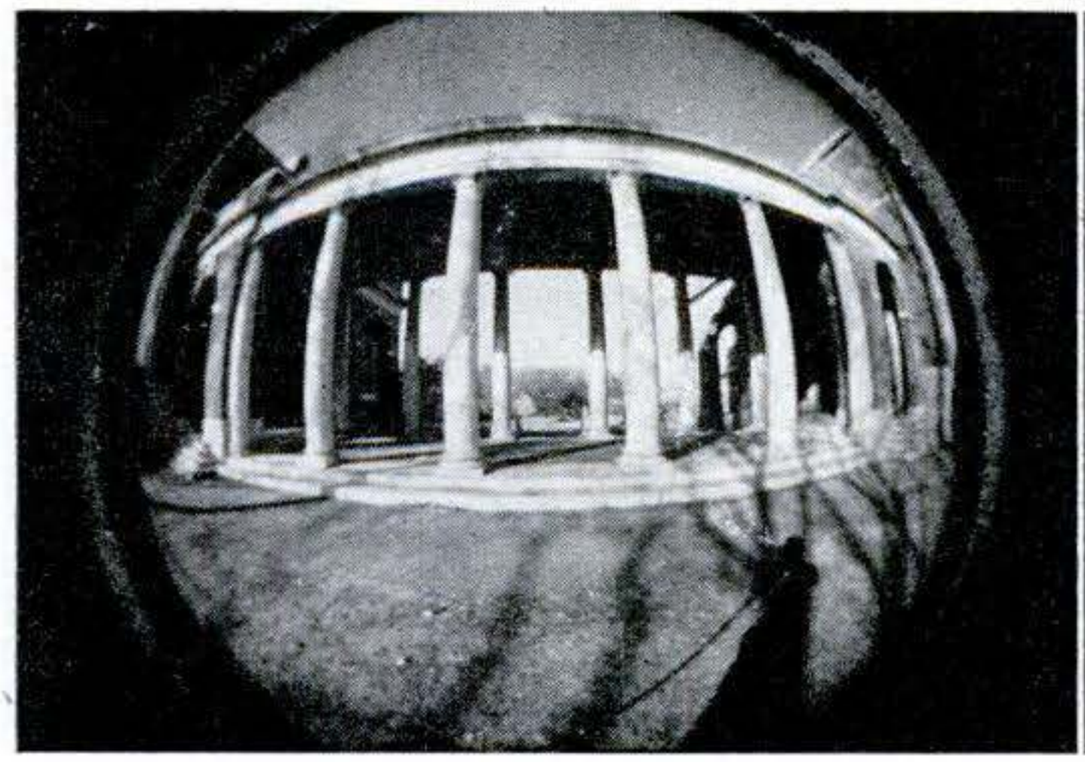
Here's How the World Looks to a Fish

THE man whose distorted face stares at you from above the headline has only himself to blame for the way he looks. He's William M. Sinton, a Johns Hopkins physicist, and the picture is a self-portrait. It was taken with a special lens he devised for his camera to enable him to show us how he thinks we look to fish, whose view of our world is never a true one because they are staring at it through water.

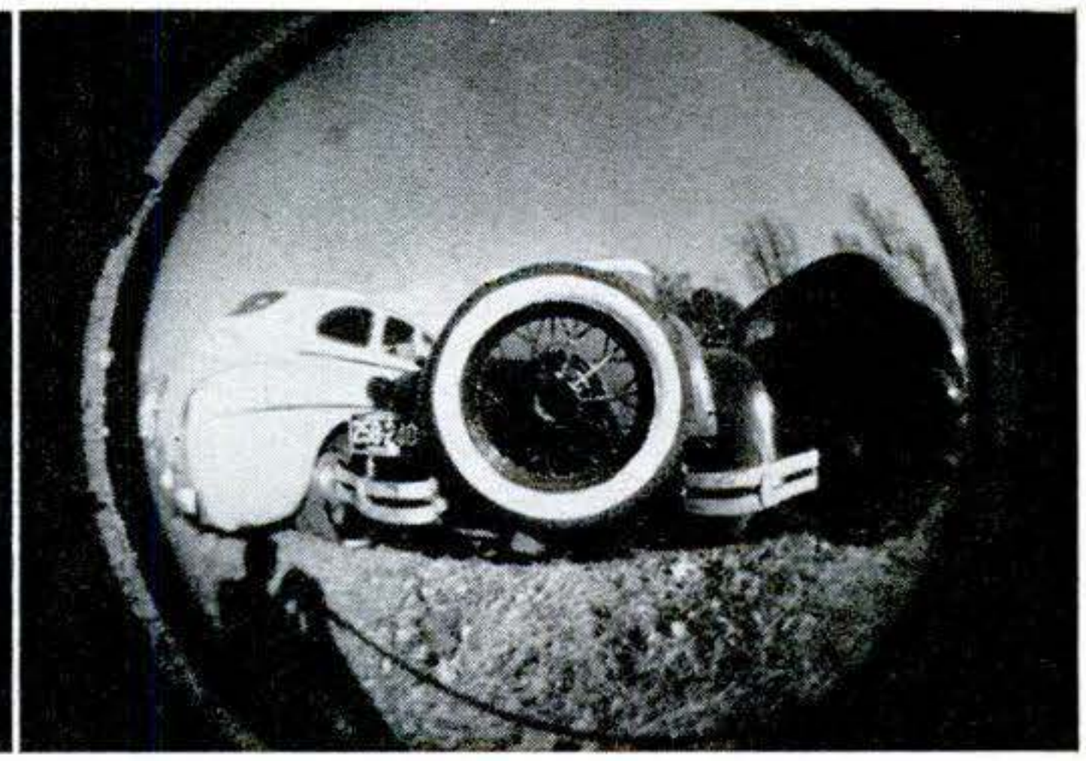
If you have mastered the uncomfortable trick of opening your eyes under water you already have a good idea of what a fish is up against. Nothing looks straight.

The lens that Sinton made consists of a flat piece of glass behind which is cemented a hemispherical lens that gathers light over a 180-degree angle. He screwed the lens into his Leica and took the photos on this page.

Sinton improved upon an idea of a former teacher of his, Prof. Robert A. Wood, who about 36 years ago made a camera out of a bucket of water. Professor Wood placed his plate at the bottom of the bucket, mounted a lens halfway between the bottom and the surface, and took pictures of a railroad trestle from underneath.



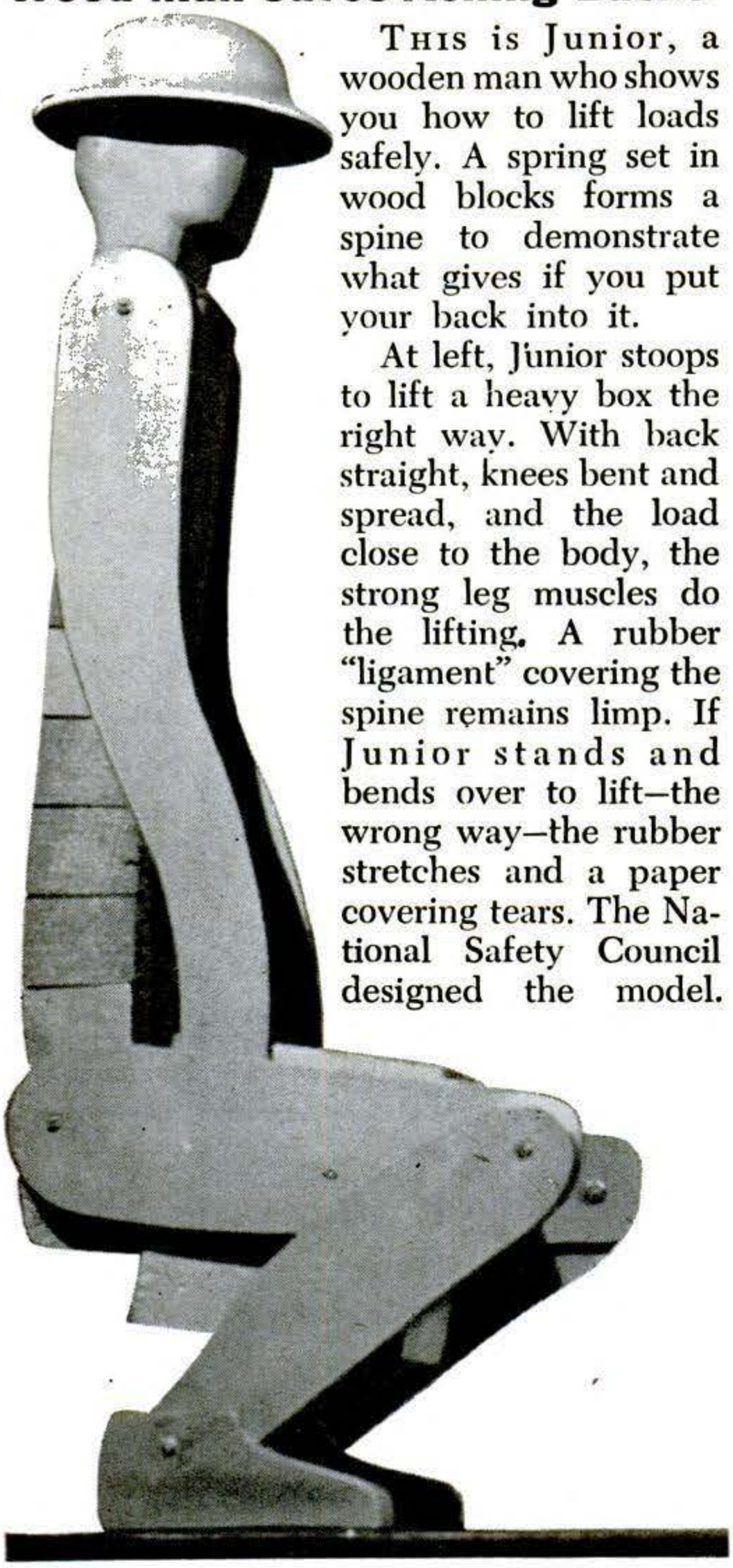
THESE COLUMNS ARE STRAIGHT and the colonnade is rectangular. Sinton's fish-eye lens makes the colonnade seem circular, while the columns look as if Samson had been at them.



A THREE-WAY CRASH, you might think, to look at Sinton's distorted camera view of three automobiles that simply happened to be parked close together. But they weren't touching.

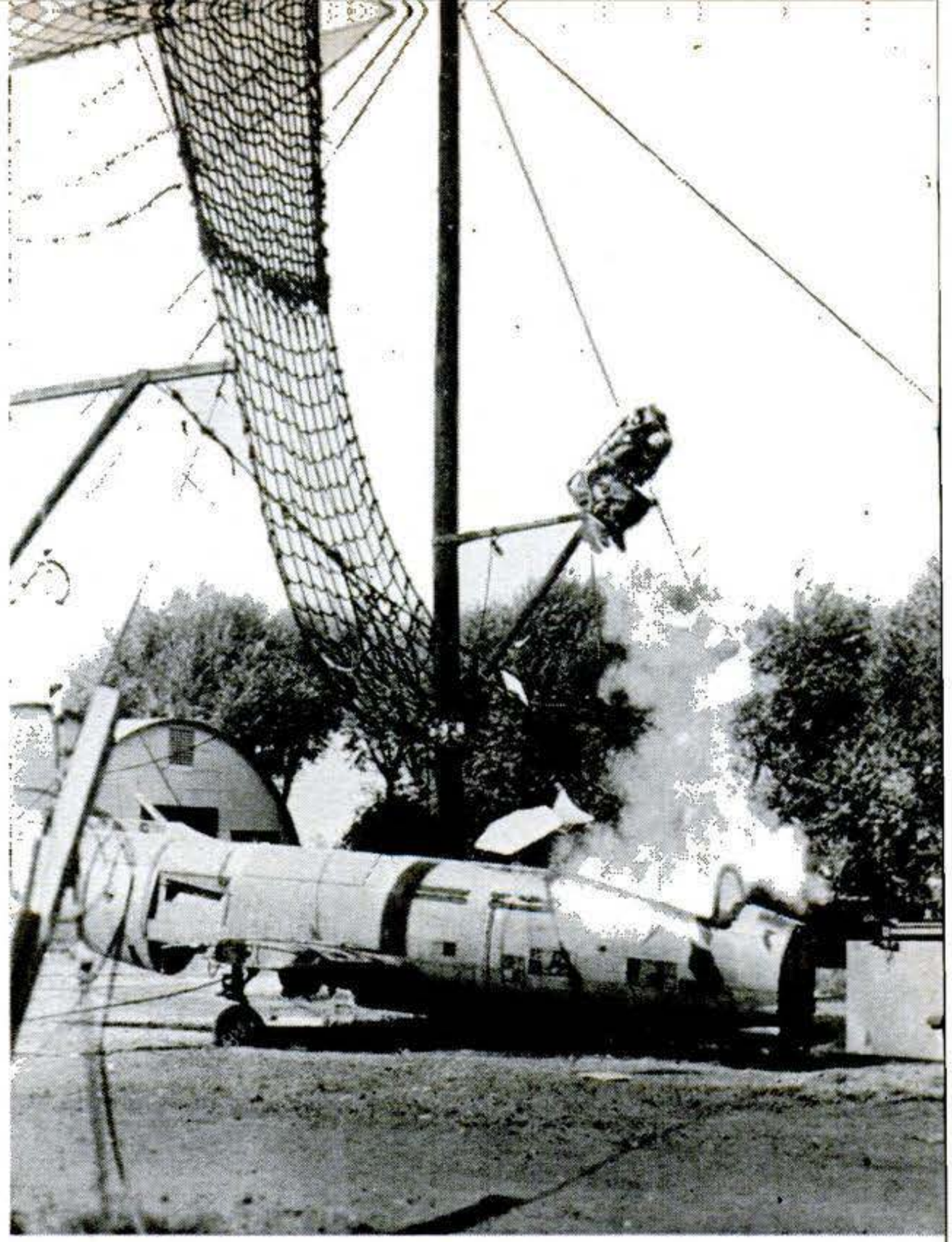
Copyrighted material

Wood Man Saves Aching Backs



THIS is Junior, a wooden man who shows you how to lift loads safely. A spring set in wood blocks forms a spine to demonstrate what gives if you put your back into it.

At left, Junior stoops to lift a heavy box the right way. With back straight, knees bent and spread, and the load close to the body, the strong leg muscles do the lifting. A rubber "ligament" covering the spine remains limp. If Junior stands and bends over to lift—the wrong way—the rubber stretches and a paper covering tears. The National Safety Council designed the model.



Out Through the Roof

THAT'S just a dummy you see above in mid-air strapped to an airplane ejection seat. He has just been fired out of an experimental cockpit. Because a jammed canopy can mean death to a pilot when he wants a fast out, the Navy is experimenting with the possibility of blasting seat and pilot right through the plastic. Pieces of the shattered canopy (painted white) can be seen in the air. The spread net catches the dummy and seat so that tests can be repeated.

Cutting Hone Sharpens Scissors

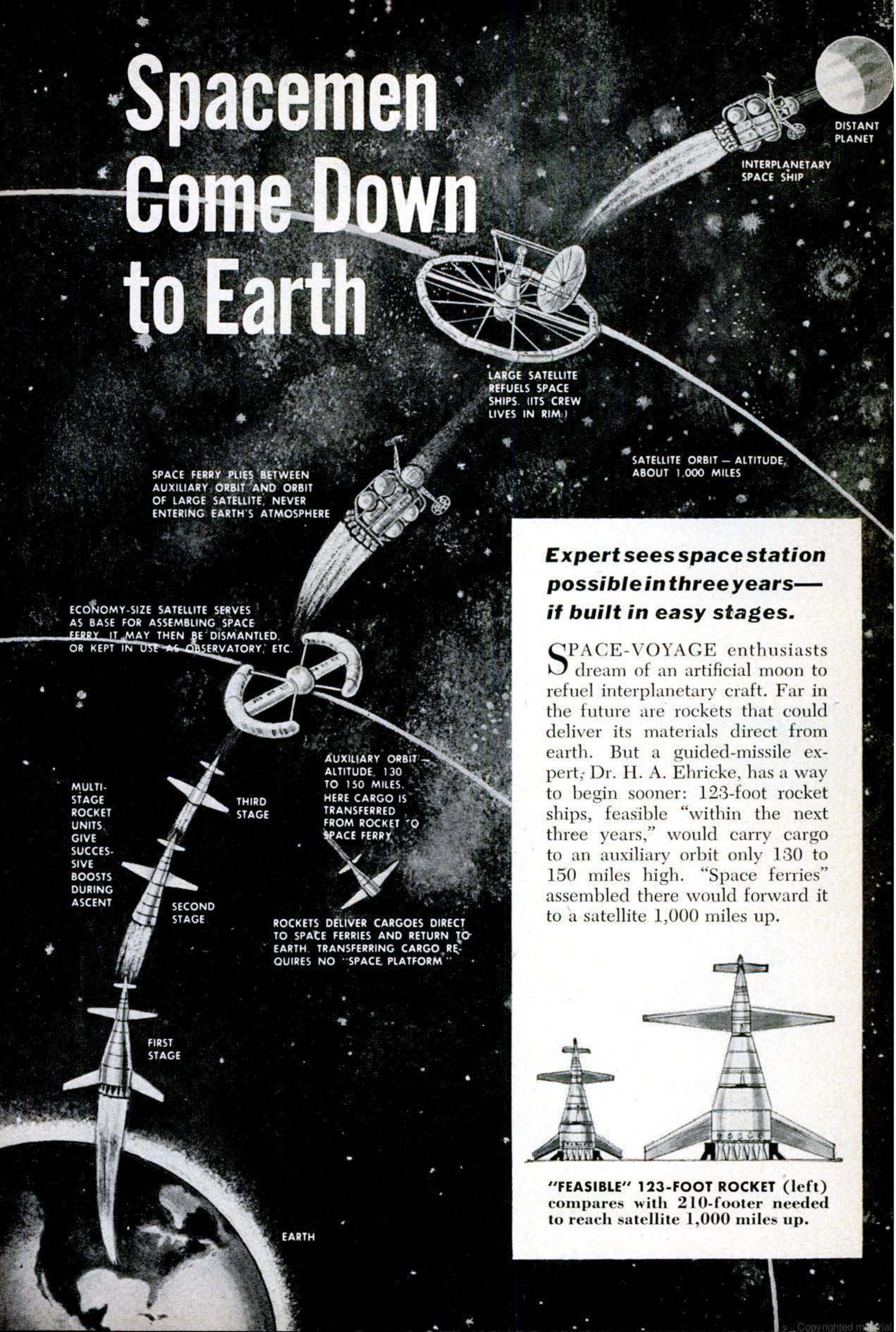
JUST cutting across the hone on this sharpener with a pair of scissors gives them a new edge. As the blades are pushed forward and pressed together, the carborundum hone adjusts automatically to fit them. Dritz, 1115 Broadway, NYC, makes it.

Ash Tray Dumps Burning Butts

A HEAT-SENSITIVE hinge on a new ash tray flips up the metal rest at an angle so that a burning cigarette will never fall to the table but will rest safely until it slides into the tray or burns out. Bill Watt, 245 Huguenot St., New Rochelle, N.Y., sells it.

Copyrighted material

Spacemen Come Down to Earth



Expert sees space station possible in three years— if built in easy stages.

SPACE-VOYAGE enthusiasts dream of an artificial moon to refuel interplanetary craft. Far in the future are rockets that could deliver its materials direct from earth. But a guided-missile expert, Dr. H. A. Ehricke, has a way to begin sooner: 123-foot rocket ships, feasible "within the next three years," would carry cargo to an auxiliary orbit only 130 to 150 miles high. "Space ferries" assembled there would forward it to a satellite 1,000 miles up.

"FEASIBLE" 123-FOOT ROCKET (left) compares with 210-footer needed to reach satellite 1,000 miles up.

Copyrighted material

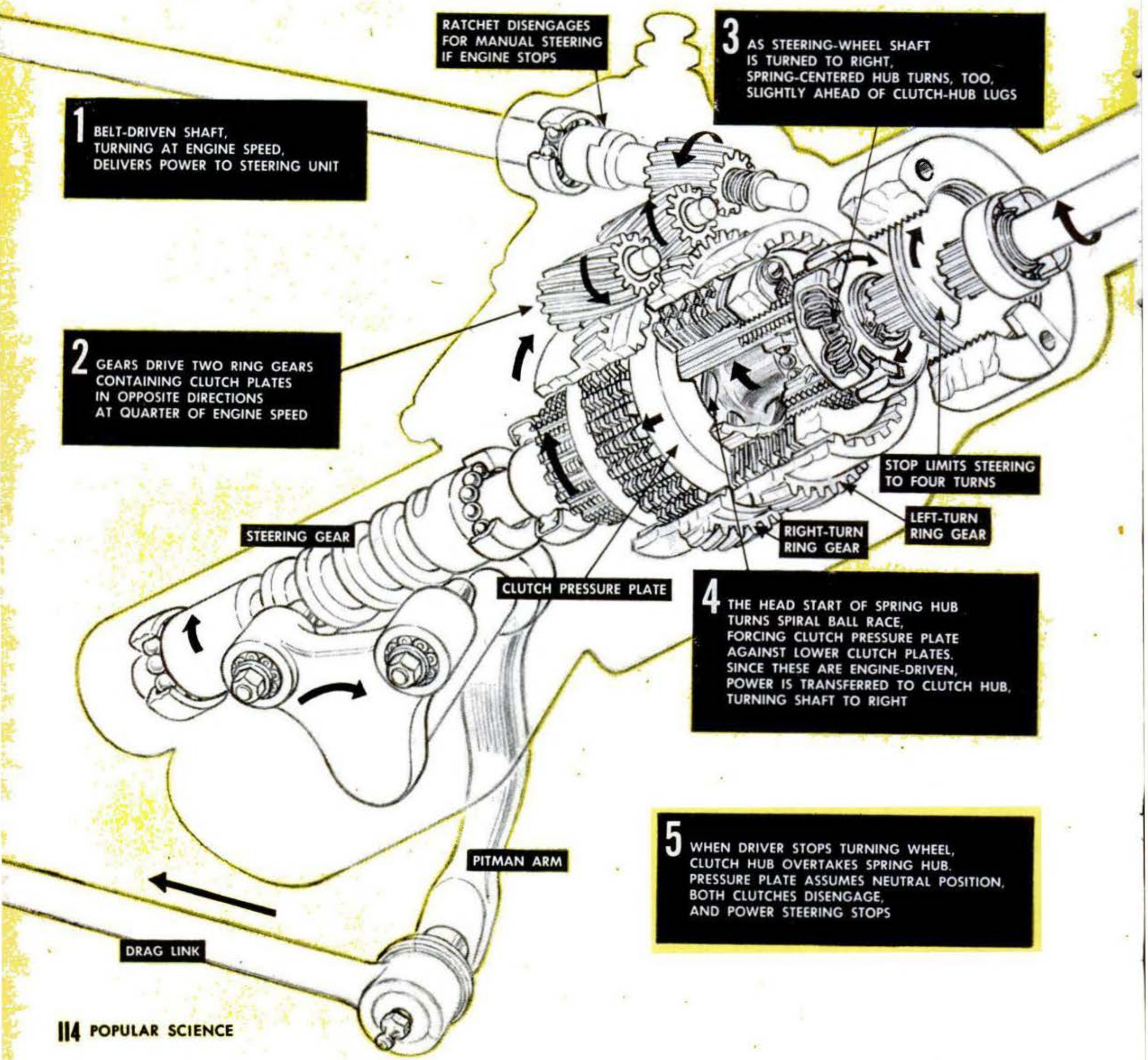
Engine Helps Steer '53

New model with foreign look has first mechanical power steering and cheaper than the hydraulic type—also better, say

By Wesley S. Griswold

FULLY mechanical power steering—first in the field—and new body styling with a foreign look are the chief talking points about Studebaker's 1953 lines.

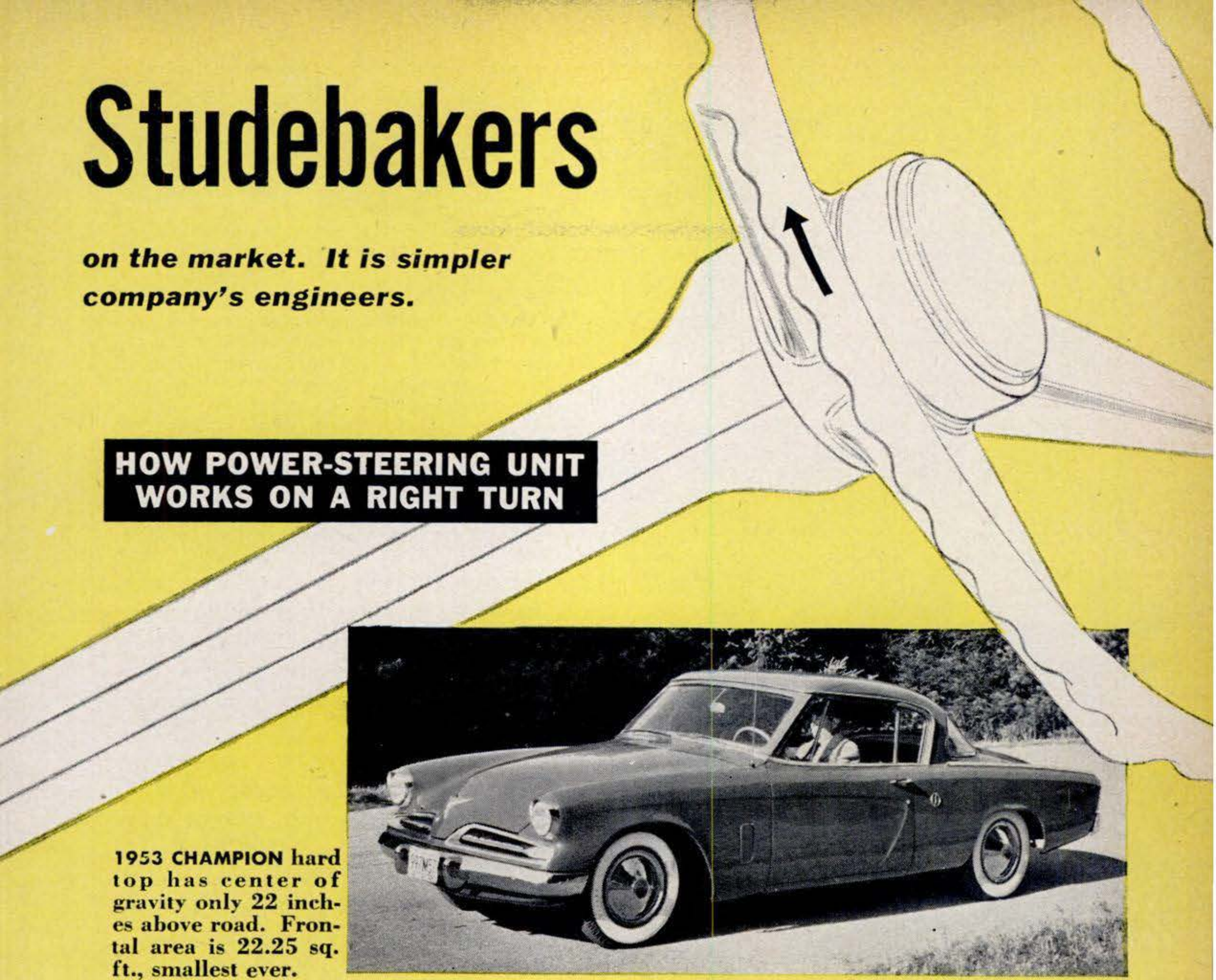
The power-steering apparatus, though marvelously ingenious and precisely machined, is essentially simple, as the drawings on these pages show. The power unit, which is the heart of it, is only six inches long and six inches wide and weighs but 22 pounds. It is bolted onto the steering shaft just aft of the gearbox,



Copyrighted material

Studebakers

on the market. It is simpler company's engineers.



HOW POWER-STEERING UNIT WORKS ON A RIGHT TURN

1953 CHAMPION hard top has center of gravity only 22 inches above road. Frontal area is 22.25 sq. ft., smallest ever.

to which it is connected, and takes its power from the engine by means of a belt.

The power unit consists of a gear train and two small clutches, one for each direction that you want to turn. The ring gears that drive the clutch plates revolve constantly while the engine is running, one to the left and the other to the right, but at one-quarter engine speed.

Engine Does 75 Percent of Work

When you turn the steering wheel to the left, the top ring gear drives the upper set of clutch plates and takes 75 percent of the steering effort off your hands. When you turn the steering wheel to the right, the bottom ring gear drives the lower set of clutch plates and gives you an equally effective assist. The instant that you quit turning the wheel, the clutches disengage and the ring gears run free. If the belt to the power unit should break, the car automatically reverts to normal steering.

Studebaker's engineers contend that mechanical power steering is both better and cheaper than the popular hydraulic varieties. There's no chance for leakage, they say, no high-pressure pump to worry about, far fewer parts to get out of adjustment and significantly less fuel consumption and power loss. I can vouch that it drives as well as the best of the three leading hydraulic makes, for I have tried them all.

At the time I sampled Studebaker's power steering, no one could tell me how much cheaper than hydraulic power steering it was going to be. Costs to the consumer had not yet been figured out. Everybody agreed, however, that it should cost less right from the start. And if H. E. Churchill, Studebak-

Copyrighted material

FACTS ON '53 STUDEBAKER

Model: Champion hard-top convertible.

Engine: 6-cyl. L-head; 85 hp. at 4,000 r.p.m.; compression ratio, 7.5:1; piston displacement, 169.6 cu. in.; bore and stroke, 3" by 4"; piston travel (in feet per car mile at 20 m.p.h.), 2,107; crankshaft bearing surface, 12.41 sq. in.; torque, 138 lb.-ft. at 2,400 r.p.m.

Weight: 2,750 lb.; per hp., 32.35 lb.

Transmission: torque converter with gears; rear-axle ratio, 4.10:1.

Steering ratio: 19.4:1 (with power steering); radius of turning circle, 20'.

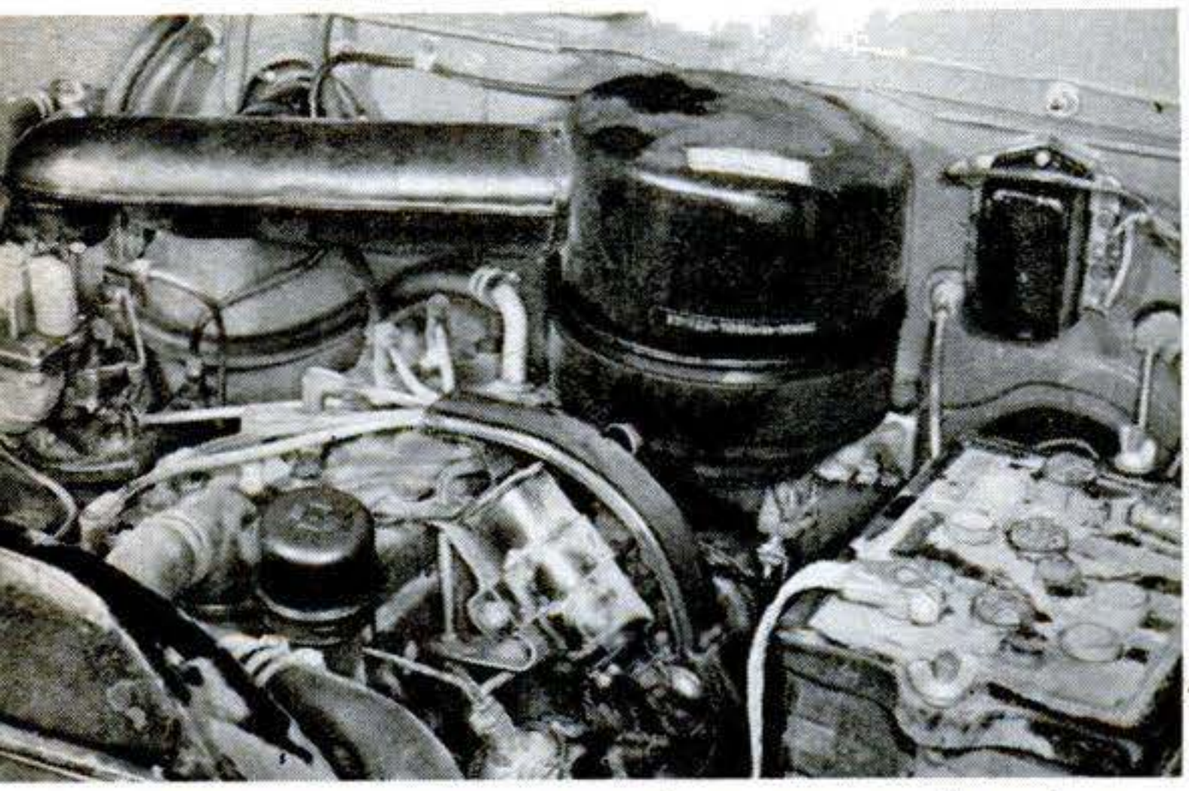
Effective brake-lining area: 144 sq. in.

Springs: front, coil; rear, semi-elliptic.

Outside dimensions: height, 56 5/16" (loaded); over-all length with bumpers and guards, 201 15/16"; width, 71"; wheelbase, 120½"; overhang, front 33 15/16", rear 47½"; tread, front 56 7/16", rear 55½".

Inside dimensions: seat-cushion width, front 60", rear 58"; leg room, front 44¾", rear 35"; headroom, front 36 5/16", rear 35¾"; seat height, front 10⅛", rear 11¾"; vertical distance, steering wheel to seat cushion, with seat in mid-position, 5⅜"; front-seat adjustment, horizontal 5½", vertical 15/16".

Tire size: 6.40 by 15.

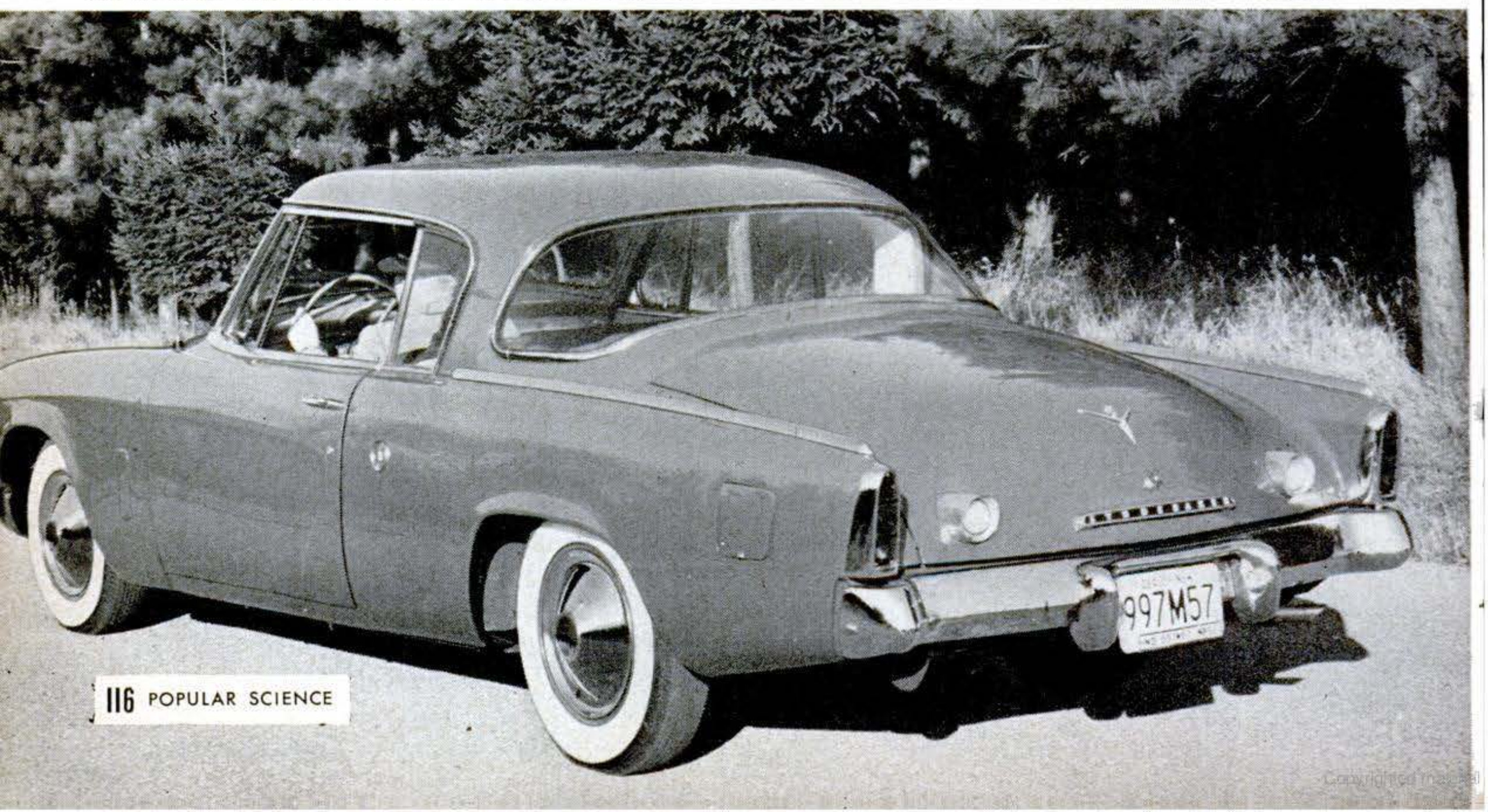


NEW DRY AIR CLEANER (top center above) contains a treated-paper filter, said to remove as much dust and foreign matter as conventional oil bath—and at a lower price.

er's vice-president in charge of engineering, proves to be right in predicting that mechanical power steering will gradually replace the hydraulic types and be universally adopted, eventually it should cost very much less.

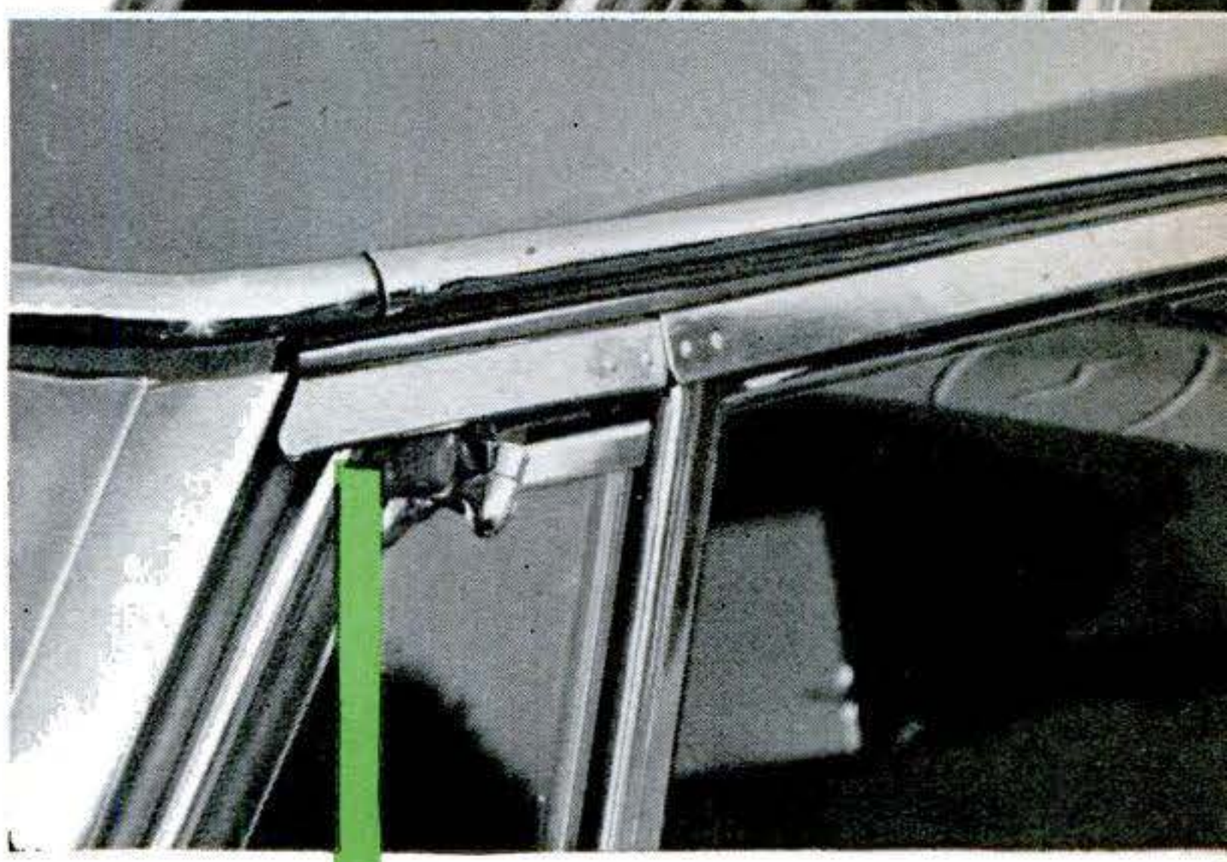
Studebaker engineering tests have proved that when a car equipped with mechanical power steering is being driven straight down a road at 40 miles an hour, only a little more than one-seventh of one horsepower is required to keep the ring gears in the power unit moving. On the other hand, the engineers found out that at 40 miles an hour, driving straight ahead, it takes a fraction over one

CLEAN, SWEEPING LINES are evident in the rear as well as the front of the 1953 Champion hard-top convertible. The little lights above the hind bumper are back-up lights—extra.



Copyrighted material

KEEPING RAIN OUT OF WINDOWS is achieved by spring-loaded metal flap (right) that turns down over window edge when door is closed against tiny lever (arrow).

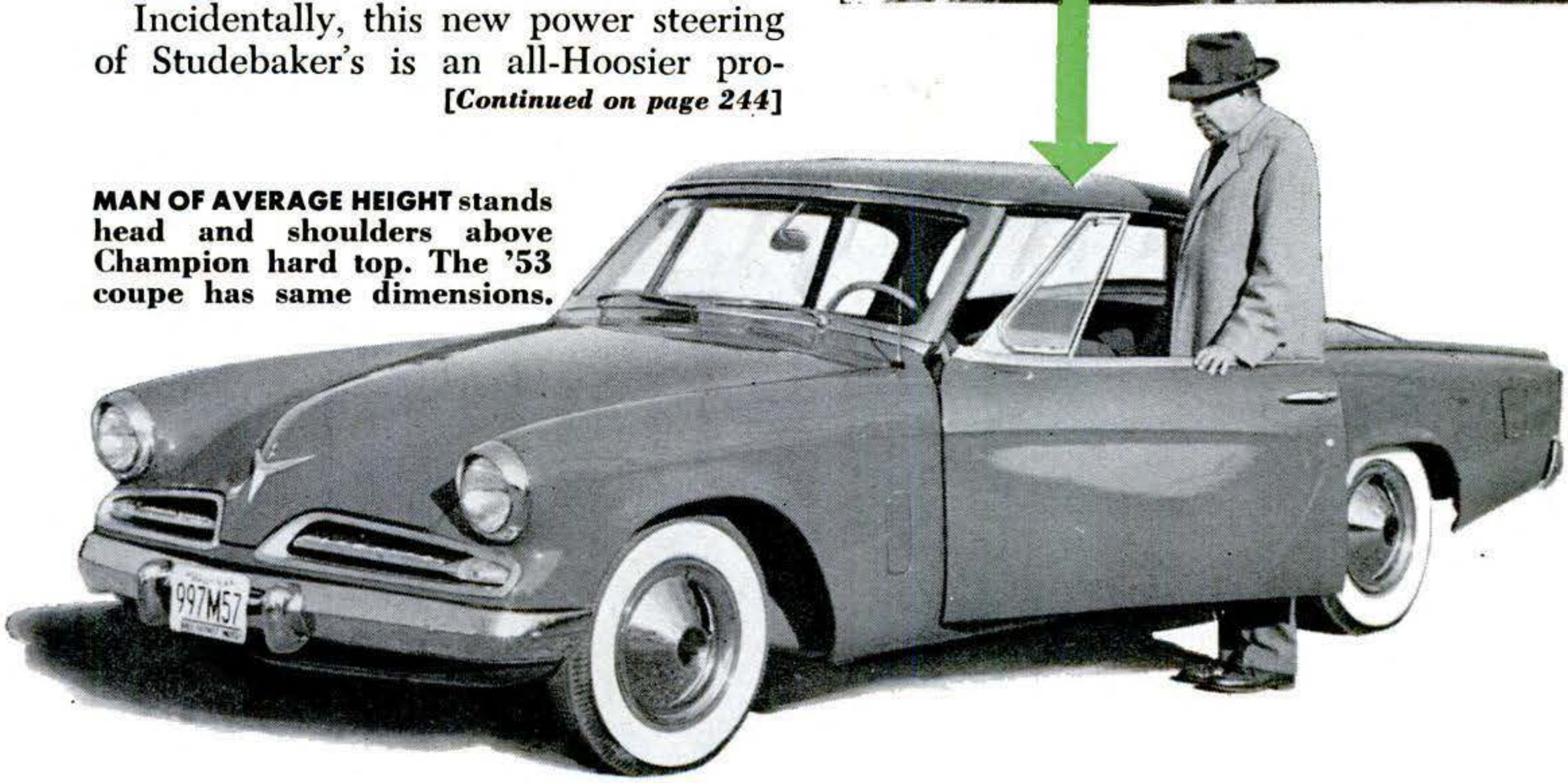


horsepower to maintain the oil pressure for a typical hydraulic power-steering system.

You can appreciate what this difference means in terms of fuel consumption when you learn that it takes 12 horsepower to keep a Studebaker Commander (eight cylinders) moving at 40 miles an hour, using overdrive. If that car were equipped with hydraulic power steering, eight percent more horsepower (and fuel) would be needed simply to maintain pressure for a steering system that, so long as the driver kept going straight, wasn't doing any work. On the other hand, if the same car were equipped with mechanical power steering, only 1¼ percent more horsepower would be consumed.

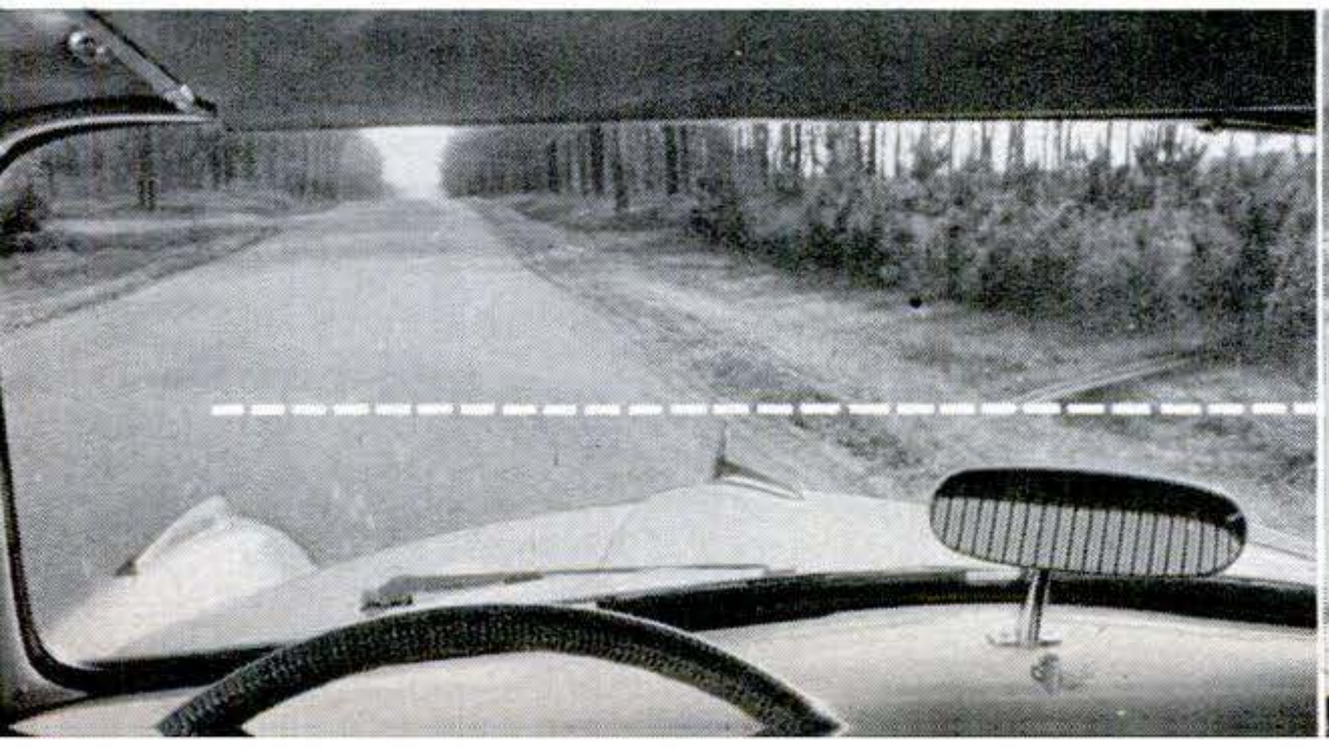
Incidentally, this new power steering of Studebaker's is an all-Hoosier pro-

[*Continued on page 244*]



MAN OF AVERAGE HEIGHT stands head and shoulders above Champion hard top. The '53 coupe has same dimensions.

REAR-VIEW MIRROR of the 1952 cars (below) was in an awkward spot. In new models (right below) it is better located. The 1953 cars also have up to 33 percent more window area.



MORE OF THE ROAD is visible from the wheel of the 1953 Champion hard top (below) than from that of the '52 model (left below), even though the '53 hood is eight inches longer.

Bank in Bus Comes to Meet Customers

Two banks on wheels are making regular trips into rural districts of Puerto Rico to meet depositors, arrange loans and give investment advice. The banks are set up in Diesel buses, with a full staff of tellers and other trained personnel. Their country customers have no other banking facilities.

The Banco Popular, which runs the bus banks, hopes in time to have 20 of them, serving 52 communities. Buses in use now have internal phone systems that can be hooked up to the trunk lines wherever they park, usually under a spreading canopy.

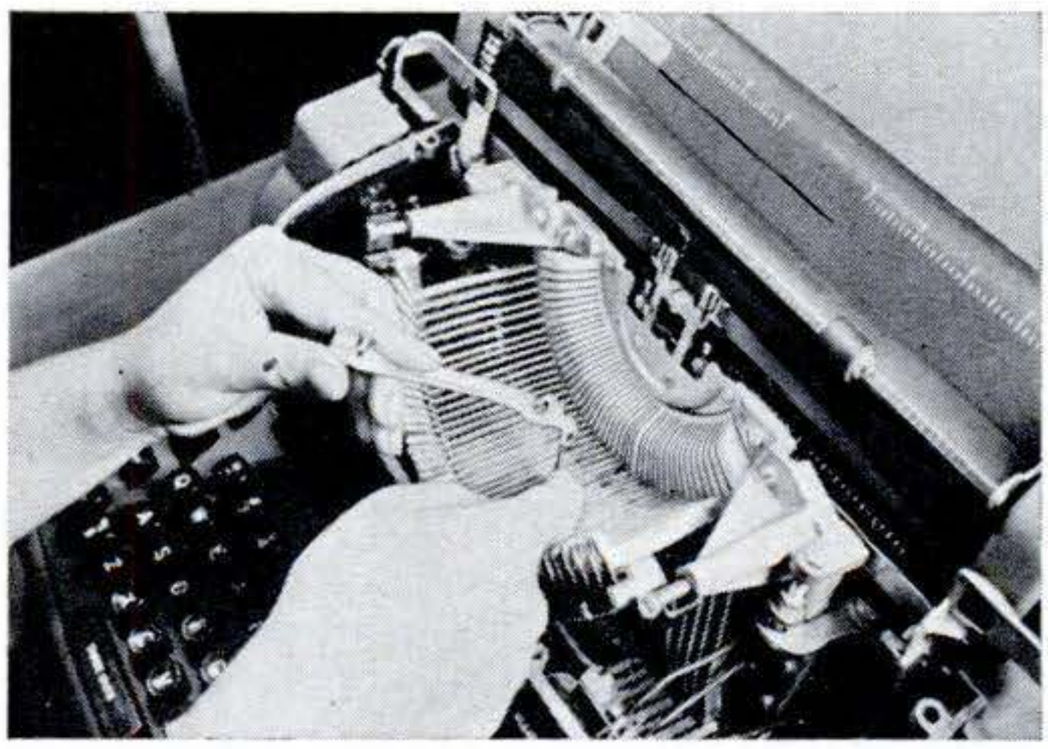
Copyrighted material

Walt Disney Builds Half-Pint History

THE delighted face at the door (left) is not Alice's, nor is the scene Wonderland. Instead, a grown girl is peering into a 30-inch-long living room in Disneyland, a miniature historic America that is to cover a 50-acre tract in Los Angeles.

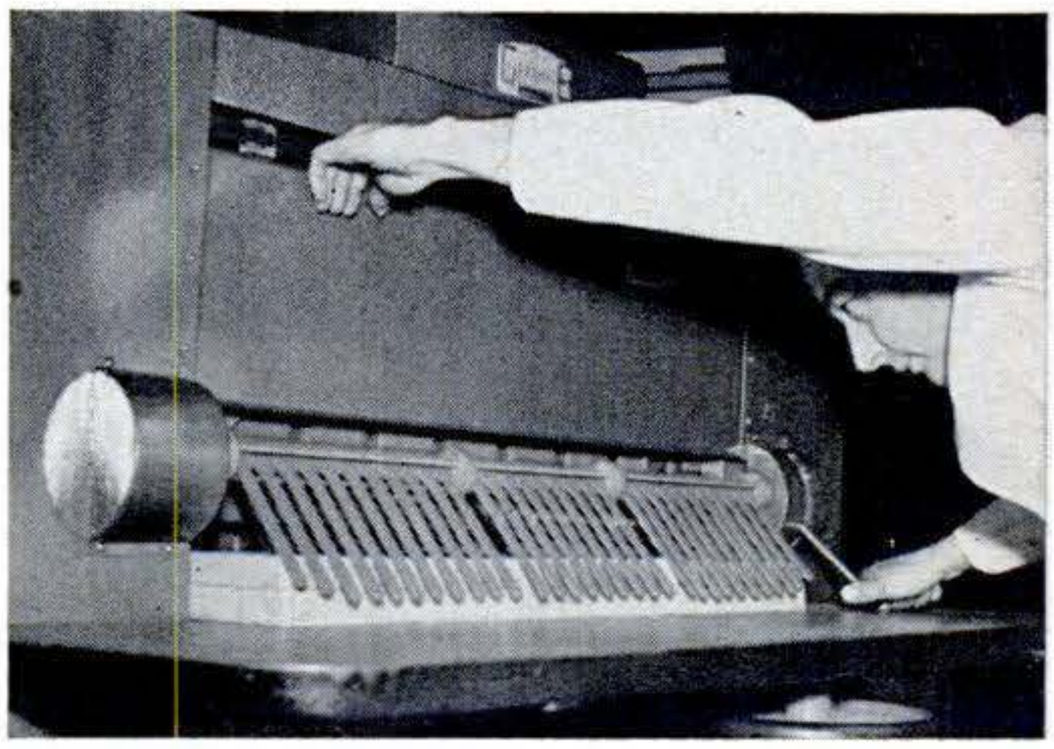
Disneyland, which still has a long way to grow, is the latest enthusiasm of the celebrated creator (above) of Mickey Mouse. Its purpose is to entertain people of all ages and also to teach them by means of tiny but exact models how life in the U.S. developed to its present level.

Disney has collected miniature copies of antique furnishings from all over the country and built others in his studio workshops. He has set farmhouses among "crops" of paper, cloth, wax and wood.



Want New Type? Hook It On

EASILY changeable type bars with chemical, mathematical and other scientific symbols, as well as foreign-language characters, have been developed for electric typewriters by IBM and the Atomic Energy Commission. They were requested for special work at Oak Ridge. A typist can hook them on or take them off in seconds.

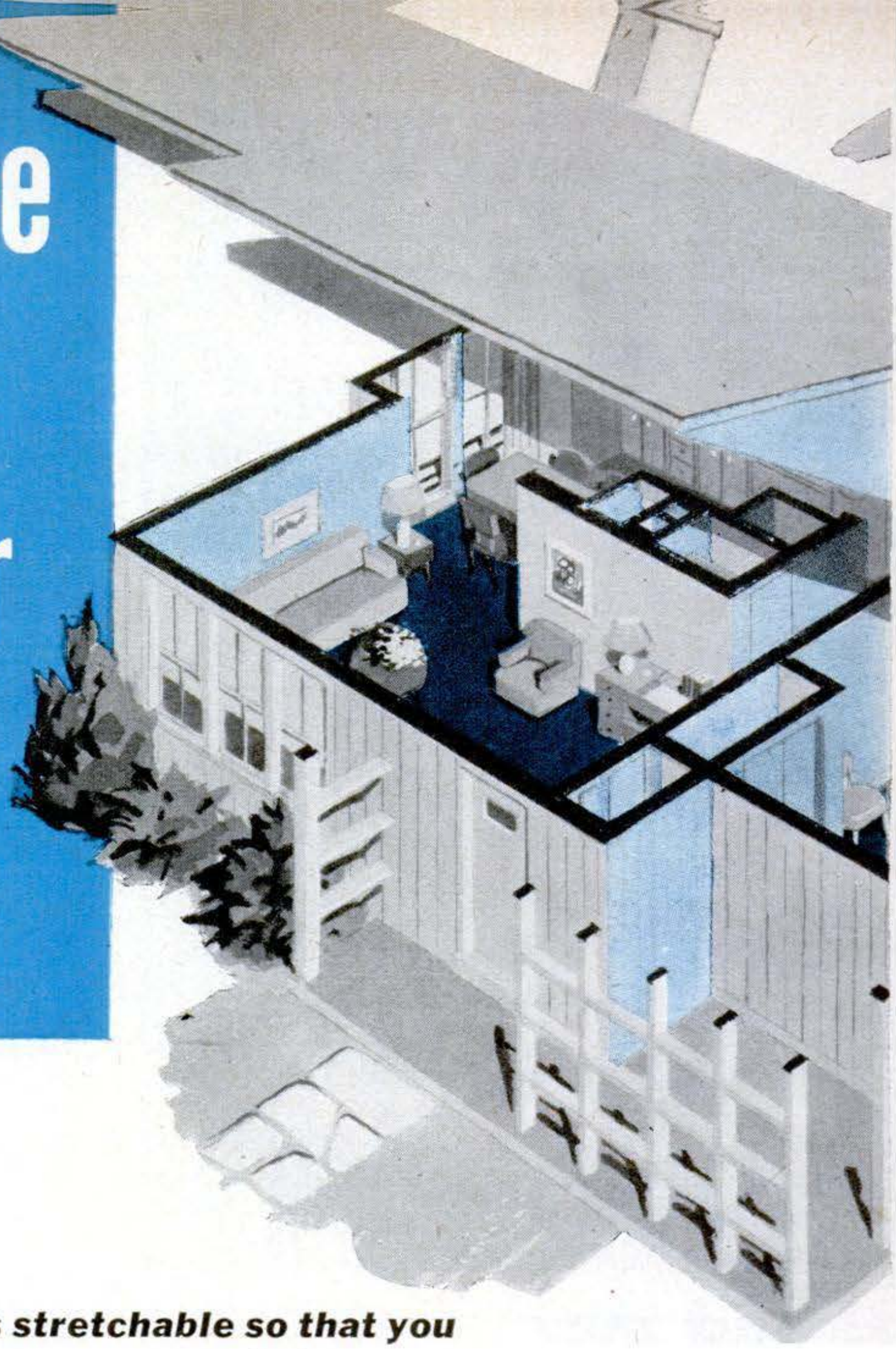


Paper Cutter Can't Cut Hands

THE operator of the power paper cutter above would really have to work hard to get his hands trimmed at the same time. A grille screens the cutting blade, and the machine won't run until the operator's hands are both working levers well out of harm's way. The cutter was developed for the British printing industry.

Copyrighted material

This House Grows with Your Family



Its roof is stretchable so that you can add rooms as needed without spoiling the looks of the place.

By Thomas R. Henry

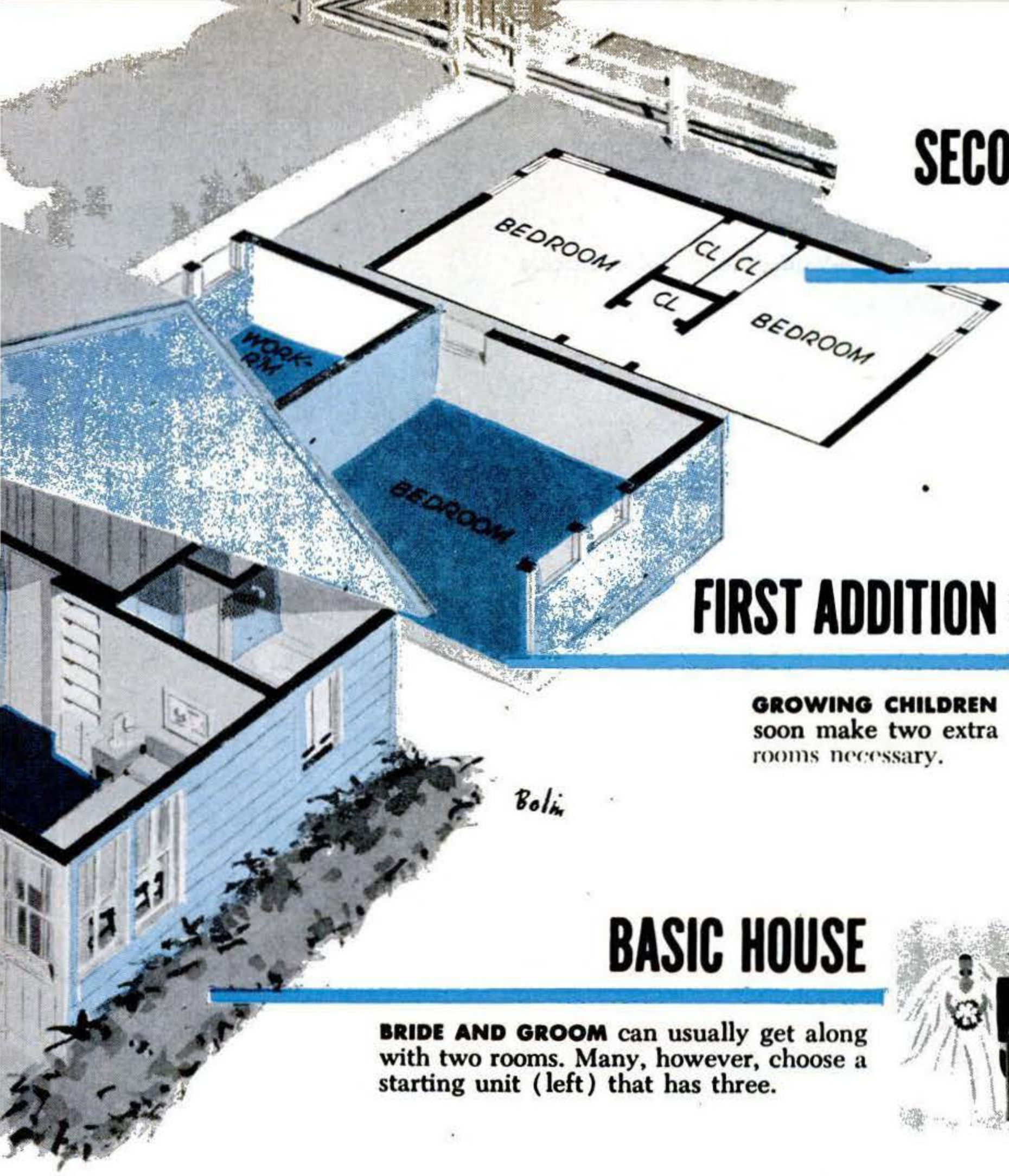
ARCHITECTS working for the Department of Agriculture are designing baby farmhouses for babyless farmers. These will grow up into full-sized farmhouses for full-sized families.

The idea is for the young farmer and his bride to start with two, or at most three, well built rooms—which can be expanded to six or seven, two rooms at a time, as the family increases. Already building plans for four types have been distributed and three more are being tested at the Agricultural Research Center, Beltsville, Md.

The baby farmhouses usually start out as cellarless structures containing a kitchen-dinette and a living room-bedroom. This is about what a bride and groom would begin with in the average one-room city apartment. It's plenty for two young people who both have jobs and no great accumulation of furnishings. A city couple just moves out when the honeymoon nest gets too small. It can't be stretched. The farm couple, on the other hand, must stay where they are, adding to the house they have or building a new one.

Many a still-extant farmhouse is built around the nucleus of the old log cabin

Copyrighted material



SECOND ADDITION

THE LIMIT in house expansion is needed for this lusty family.

FIRST ADDITION

GROWING CHILDREN soon make two extra rooms necessary.

BASIC HOUSE

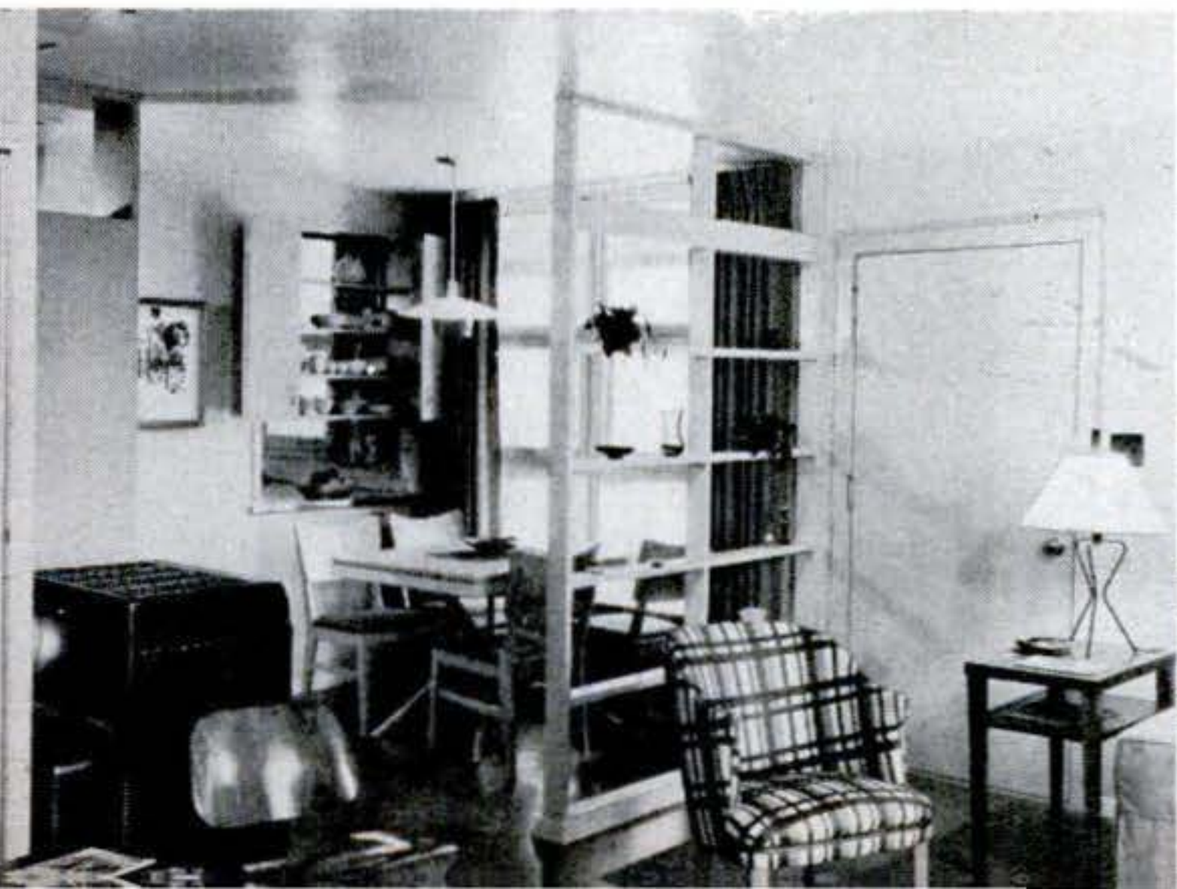
BRIDE AND GROOM can usually get along with two rooms. Many, however, choose a starting unit (left) that has three.

that Great-grandfather put up in the clearing when he came as a homesteader. This has led to a peculiarly American style of architecture—without benefit, until lately, of architects—the "rambling" house now so popular in the suburbs.

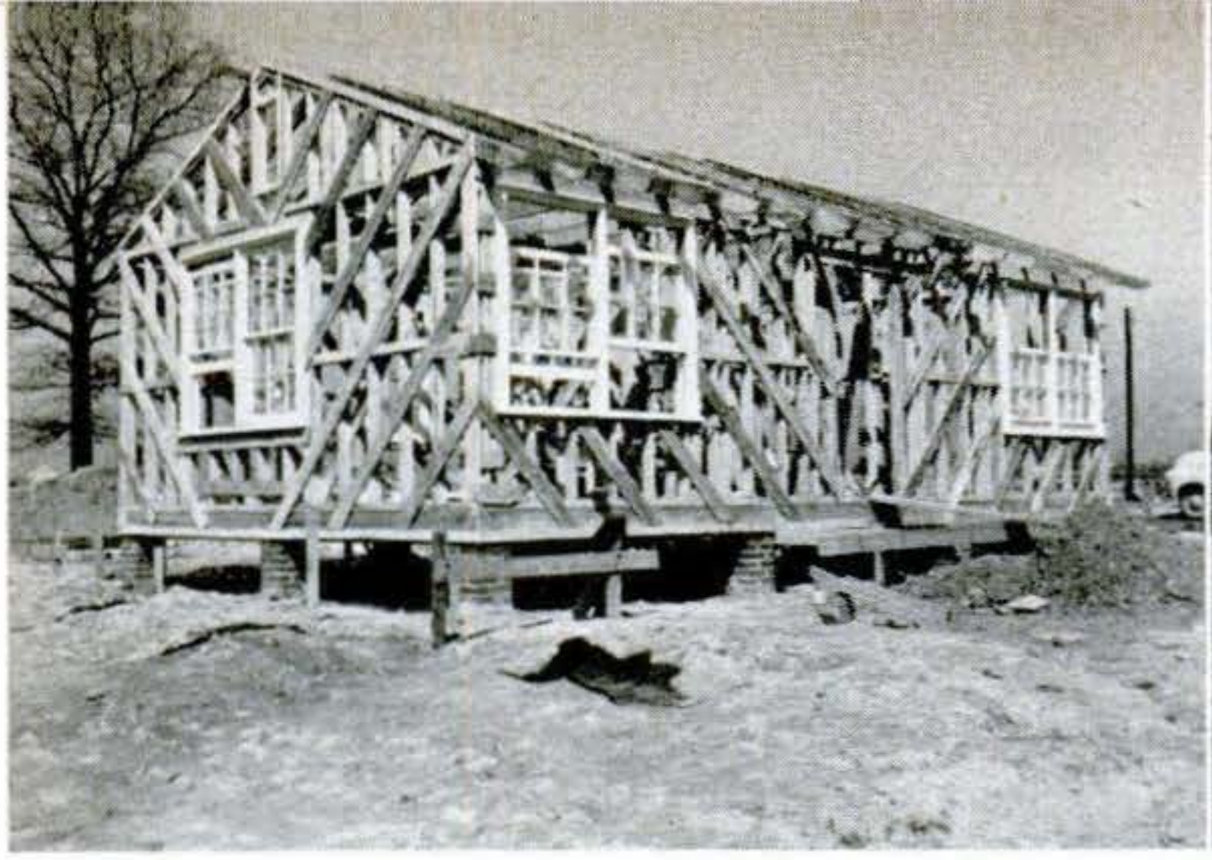
But on the farm the result often has been an atrocity with bedrooms so scattered that occupants must go through a couple of other bedrooms to reach their own quarters, and with kitchen and living room altogether out of proportion to the rest of the house.

This won't happen to the new stretchable farmhouses. The plans envisage the entire house which may sometime be

IN A TWO-ROOM UNIT, a trellis separates dinette from living room without loss of light.



LIVING ROOM ALSO SERVES as bedroom—the sofa is really a camouflaged standard bed.



THERE'S NO CELLAR to start with. The completed framework of a two-room basic house here stands on brick piers. Plans allow for cellar to be dug later, entered from outside.

READY FOR PAINTING, the basic house now has concrete retaining walls and doorsteps. Simple design makes sure that additions will not destroy clean lines of "starter" house.

built around the nucleus of the original kitchen-dinette and living room-bedroom. Rooms can be added in pairs and fit perfectly with the original structure.

Rooms for Sprouting Teen Agers

The day will come when the teen-age girls will want a room of their own. A living room big enough for two will be badly crowded when there is a family of six or eight.

The houses are so designed that cellars can be dug under them someday. They have—perhaps the most significant feature of all—stretchable roofs. In the end, one continuous roof will cover the whole structure.

The cost of the honeymoon-nest nucleus, of course, will vary greatly for different parts of the country. The average, at present costs of material and labor, is estimated at about $6,000. The plans for the stretchable houses, however, are drawn up so that the average young farmer who is fairly handy with tools—and most farmers have to be—can do the greater part of the work himself.

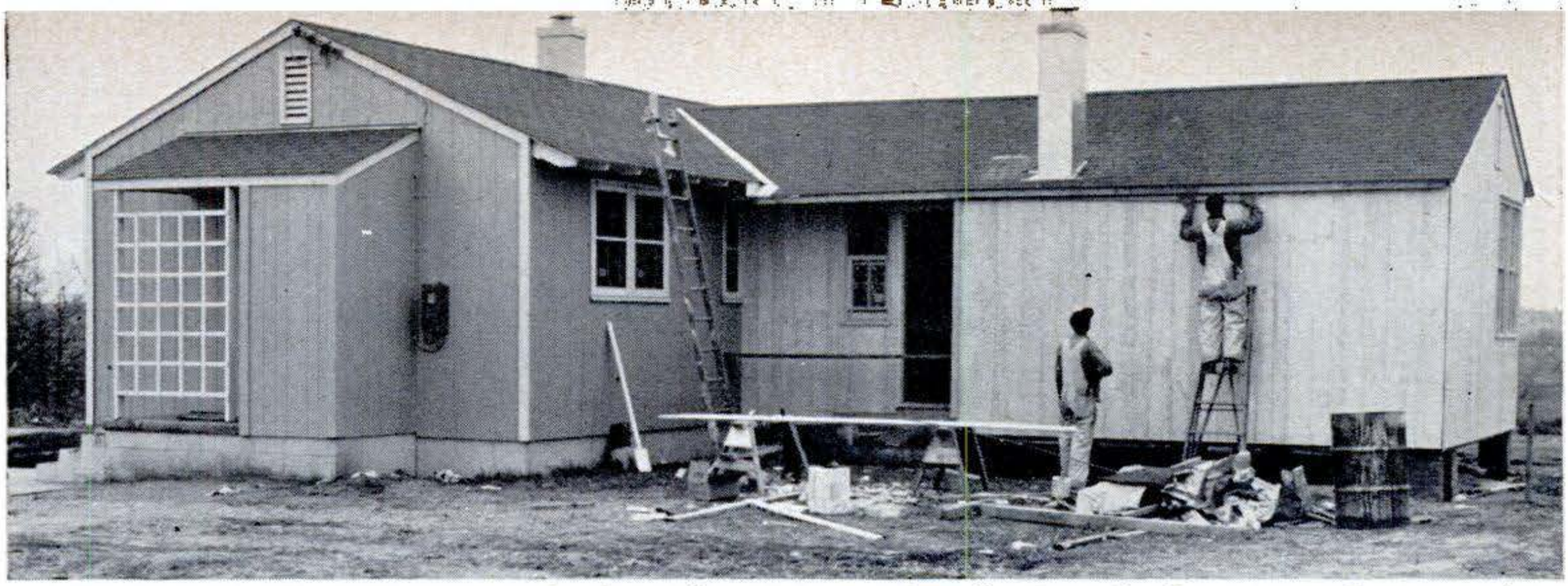
Three kinds of material can be used for the walls—cement-asbestos board, cinder block, lumber. Each offers advantages for particular localities.

The basic idea is simple enough. But the work has involved an enormous amount of architectural detail to make sure that the baby houses will grow up into good-looking adult houses rather than

A HOME WORKSHOP could easily produce the plywood table and bookcase-cupboard shown at left. Designed for the small house above, they were planned with the idea that a man fairly handy with tools could build them.

An owner's wife is here stowing away pillows in a storage cabinet with bottom-hinged door. The bed slides partly under cabinet.

Copyrighted material



WHEN THE TIME COMES, the basic house expands with a neatness that is possible only because just such an addition was planned from the start. Stretchable houses were designed primarily for young farmers whose cash income not only is small but must mainly be devoted to developing their land rather than their farmhouses.

the oddities that are familiar sights in the land.

Throughout, the architects have recognized that the farmhouse is the province of the farmer's wife, and each step of the planning has been taken in cooperation with the Agriculture Department's homemaking experts. Each of the experimental models has been tried first with young couples with jobs at the nearby Bureau of Dairy Industry.

"As the houses are lived in," says Mrs. Lenore Sater Thye, head of the Department's housing and household equipment research, "we have an opportunity to observe how the families use the space, how their flooring, paint and table tops are holding up."

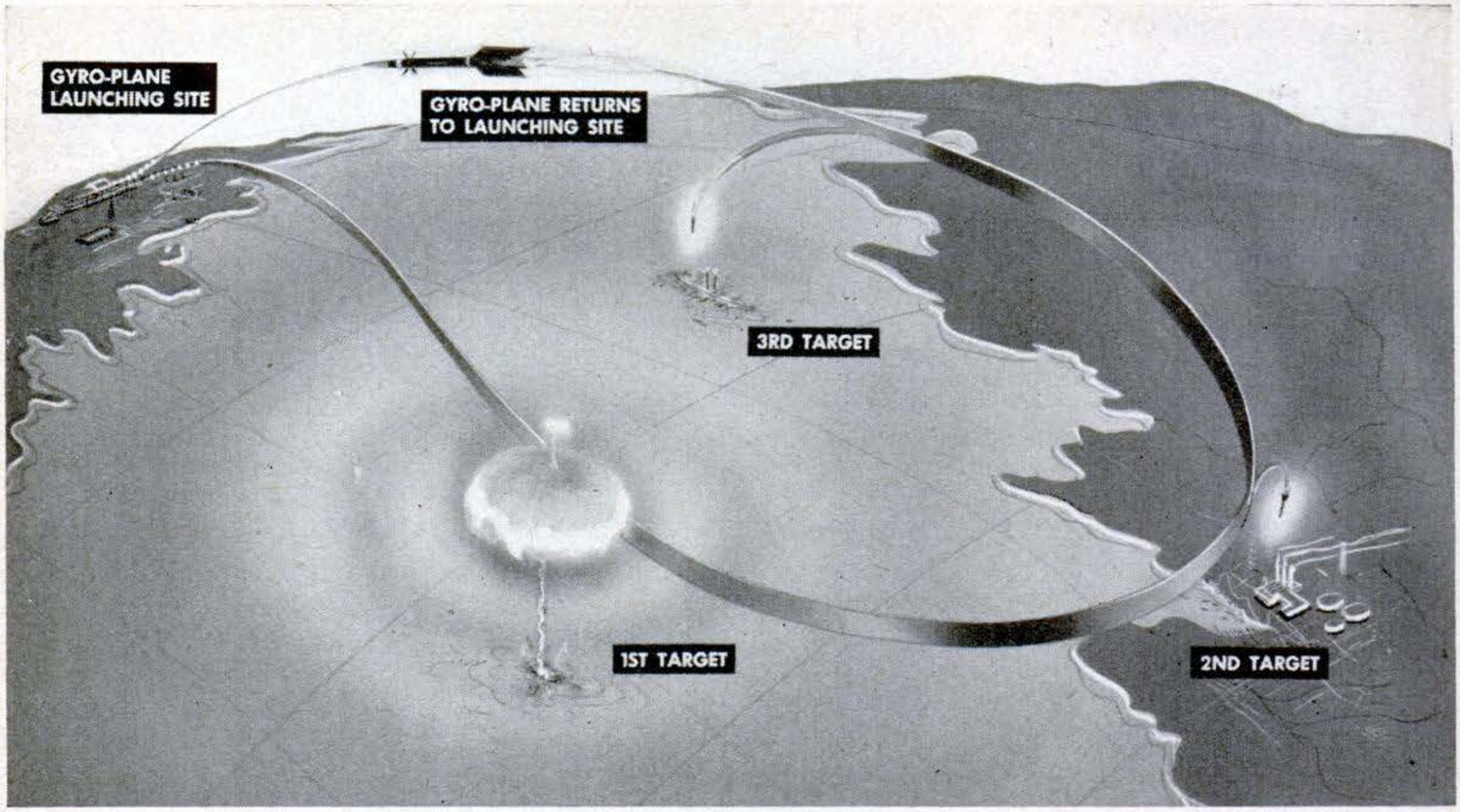
Room Divided by Screening

The two to three rooms of the models thus far designed cover a ground space of 20 by 30 feet. The living room is usually 12 by 19 feet—fairly large as living rooms go and big enough to entertain 10 to 12 people. It is so arranged that it can be divided into two rooms by curtains or screens, making one end a bedroom. In the three-room models, one of which is illustrated on the opening pages of this article, the owners start married life with a separate bedroom.

The furnishings are pretty well standardized, on the assumption that the young farmer and his wife have just started housekeeping. They can, of course, vary the assortment as they please, but the result will not be quite as symmetrical. Bed lounges 39 inches wide are placed at opposite ends of the living room. Behind each is a long wall cupboard with a storage compartment. Each of these cupboards has an upper bookshelf. END

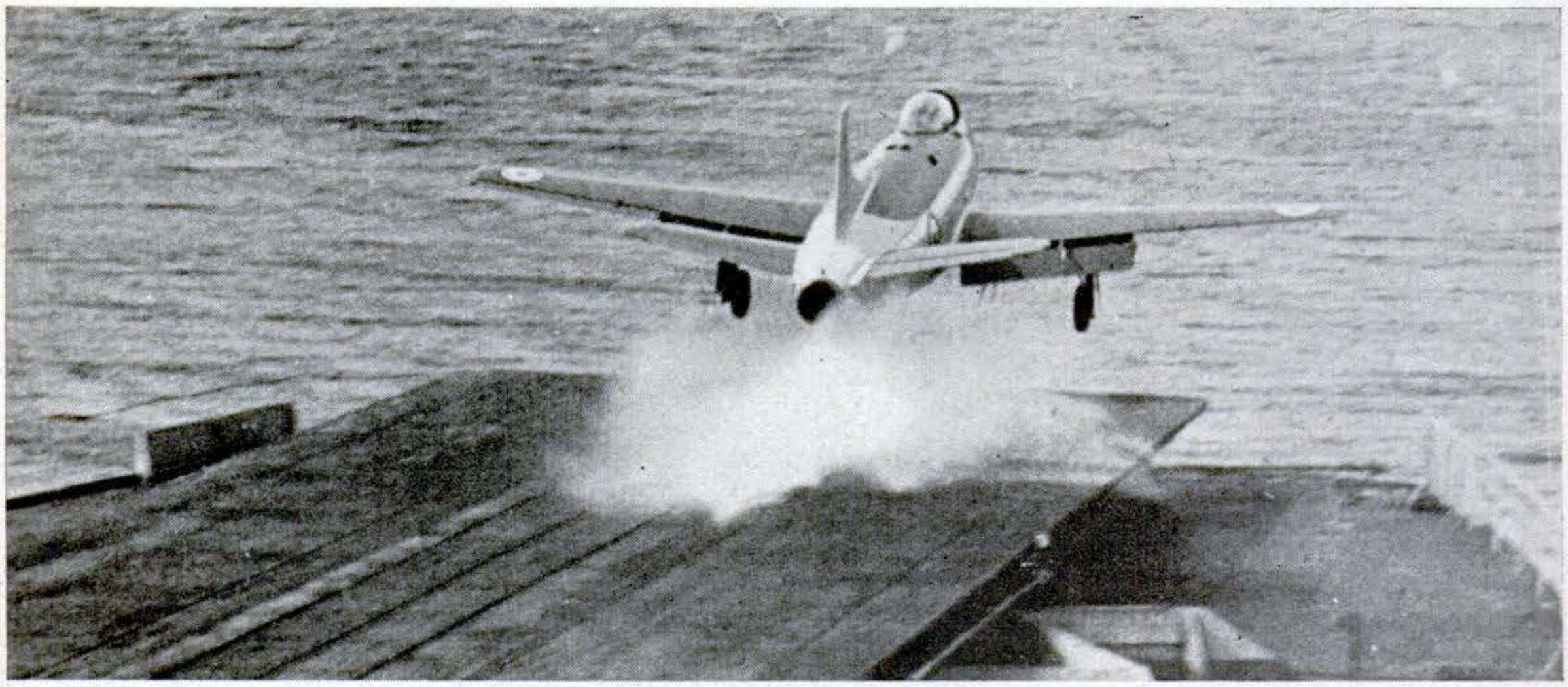
OWNERS NEED LITTLE HELP in building one of the expansible houses shown on these pages. In some cases, only skilled labor hired was for plumbing and electrical installations.

Copyrighted material



Midget Gyro May Pilot Super-Accurate Air Weapon

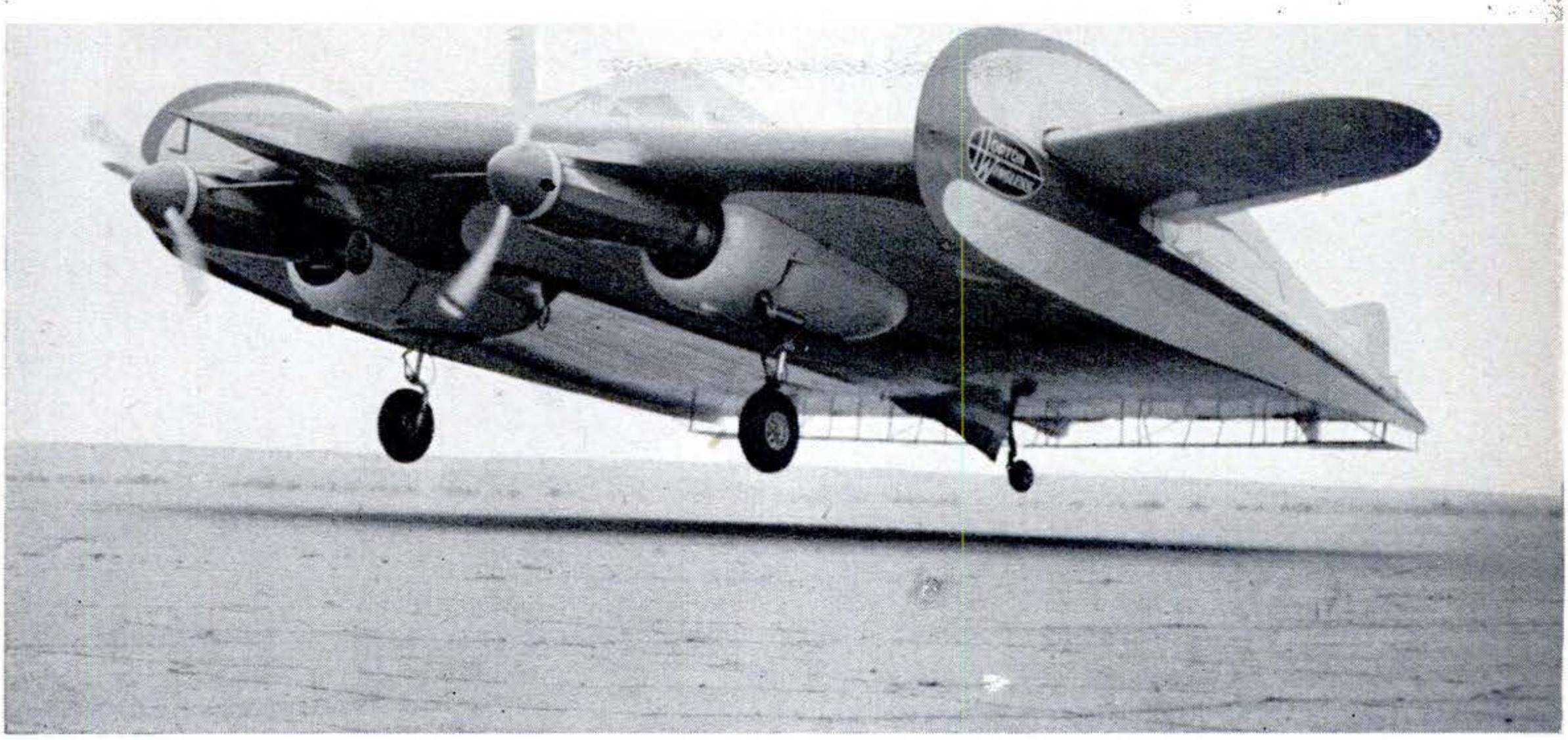
A TINY gyroscope, weighing perhaps a pound, would eliminate the pilot and navigator of a long-range aircraft visualized by Arthur V. Sommer of the Arma Corp. Thus the craft could fly at greater speeds and altitudes than a human being could endure. Its gyro-guidance system, navigating by the stars, would enable it to strike at a series of targets with unerring accuracy. The system could not be jammed nor the craft diverted by an enemy. Such a system, Sommer said recently, "is within reach today."



Navy Will Use Steam Slingshot for Carrier Launchings

THE new U.S. supercarrier *Forrestal,* now under construction, will launch some of its fast jet fighters from a new catapult powered by steam from the ship's boilers. The British-developed device, shown catapulting a Vickers Supermarine Attacker from HMS *Perseus,* will enable planes to be launched even when the carrier is at anchor or headed downwind. A hook on the aircraft is connected to a piston which is driven along a slotted cylinder. A sealing device keeps the cylinder steamtight.

Copyrighted material



Wingless Plane Passes First Test—Gets Off the Ground

THAT'S not a wingtip at upper right above, but one of two retractable eight-foot flaps to give added lift to this experimental wingless plane. Bill Horton, aircraft engineer, designed the strange craft around a Cessna monoplane. Vertical "sealers" at the tips of the fuselage increase lift, he claims, by keeping air surrounding the craft in flight from mixing with air flowing over its lifting contour. During its first high-speed taxi test at Santa Ana, Calif., the plane rose 10 feet above the runway.

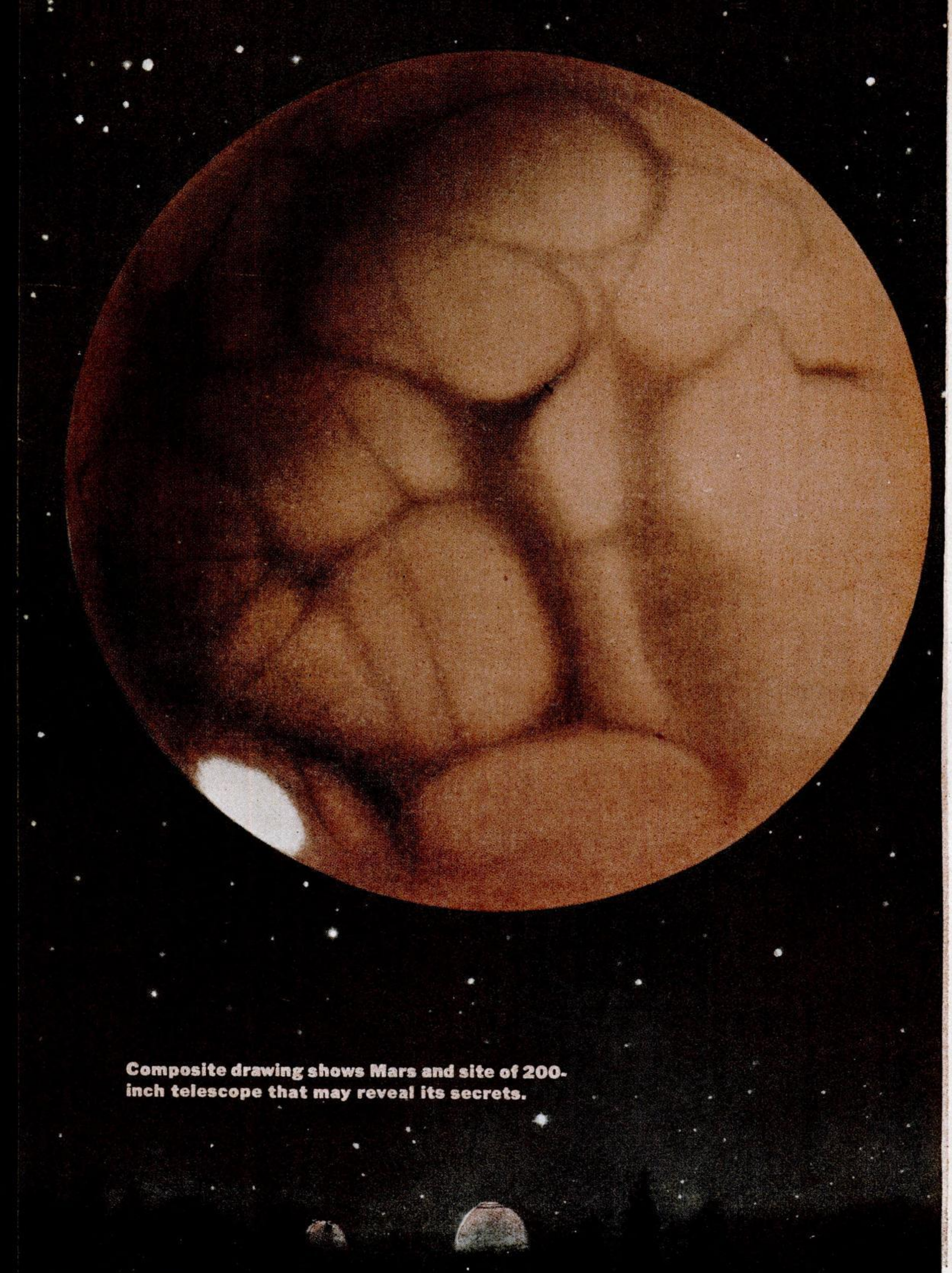
British Streamline Motorbike

BRITISH conservatism got lost in the design of this lightweight motorcycle. A streamlined cowling swoops over a shallow, S-shaped tubular frame, and a bulbous grille covers the two-stroke motor. The Commander is made by the General Steel Group.

Records Get the Brush Off

A PHONOGRAPH needle is really in the groove when this tiny brush sweeps dirt and dust before it. The brush is inset in tape which adheres to the tone arm when pressed into place. Permo, Inc., 6415 Ravenswood Ave., Chicago 26, makes it.

Copyrighted material



Composite drawing shows Mars and site of 200-inch telescope that may reveal its secrets.

Copyrighted material

Does Anybody Live on Mars?

When the big red planet swings close to Earth in 1956, giant telescopes may settle the question once and for all.

This is the first of two articles on Mars. *Next month:* How men from Earth will land and live on Mars.

By Morton Clurman

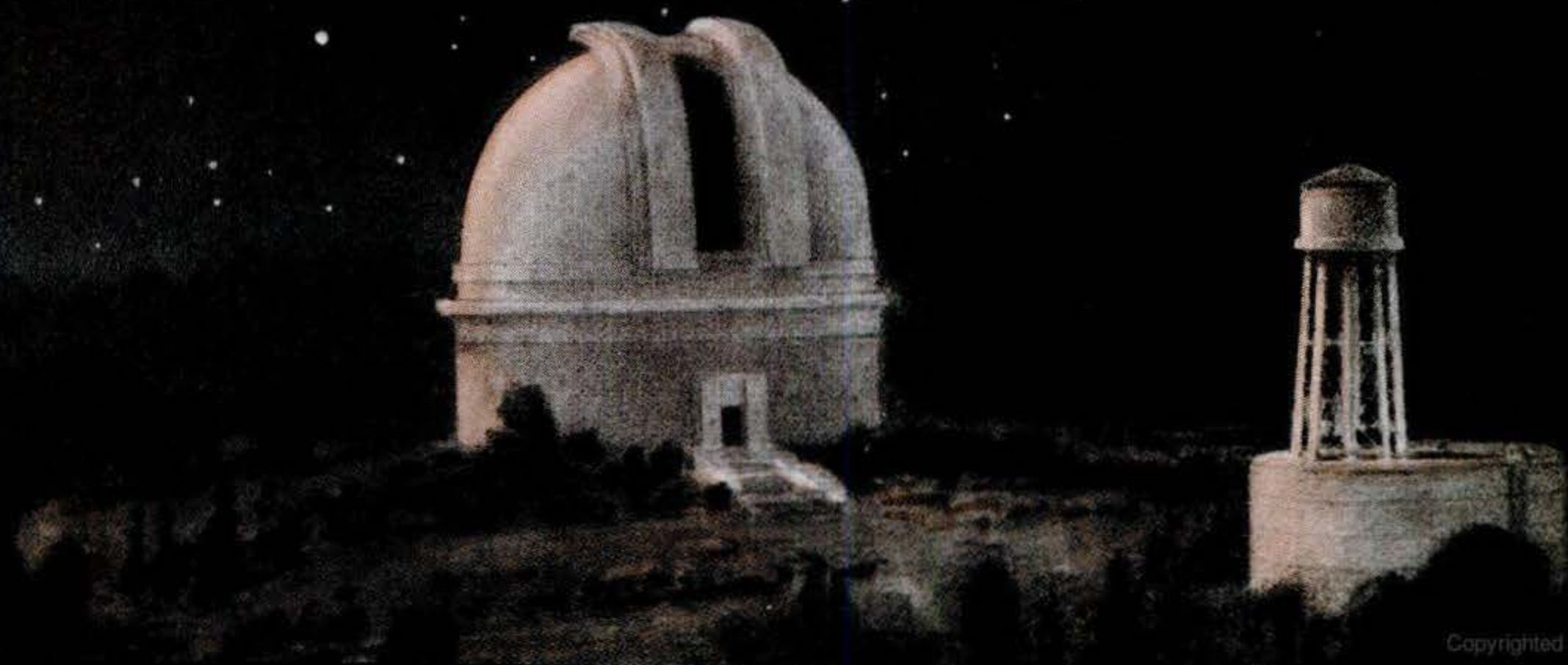
IS THERE life on Mars? We may know in 1956.

When the red planet swings closest to Earth, at intervals of 15 to 17 years, there comes the most favorable moment for astronomers to try to solve such riddles as the faint markings called "canals." The next opportunity will be three years hence.

Like all other planets and their satellites, Mars is too cool to give off light of its own and must be observed and photographed by the relatively feeble reflected light of the sun. In the past, getting an adequate photograph of Mars has required a long time exposure. And the longer the exposure, the more blurred was the image. But now there is new hope.

This time a mighty new eye will be among the telescopes trained upon Mars —the big 200-inch scope on Mount Palomar in California. Its 16-foot mirror gives it four times the light-gathering power of its nearest rival. This should permit taking motion pictures when Mars is again in a favorable position. And with the hundreds of thousands of short-exposure frames to choose from, there is a good chance that the Palomar films will yield a few sharp enough to answer the canal riddle once and for all.

For centuries men had gazed at the heavens and speculated about life on other planets. But in 1877 Giovanni Schiaparelli, in the Milan Observatory, Italy,



Copyrighted material

looking through a telescope at Mars saw something that transformed such speculations into a scientific problem. Schiaparelli had been peering at Mars for years. He had seen, as others had, the bright orange patches believed to be dry land, the bluish-green dark patches once regarded as seas and the glittering white polar caps which waxed and waned with the Martian seasons.

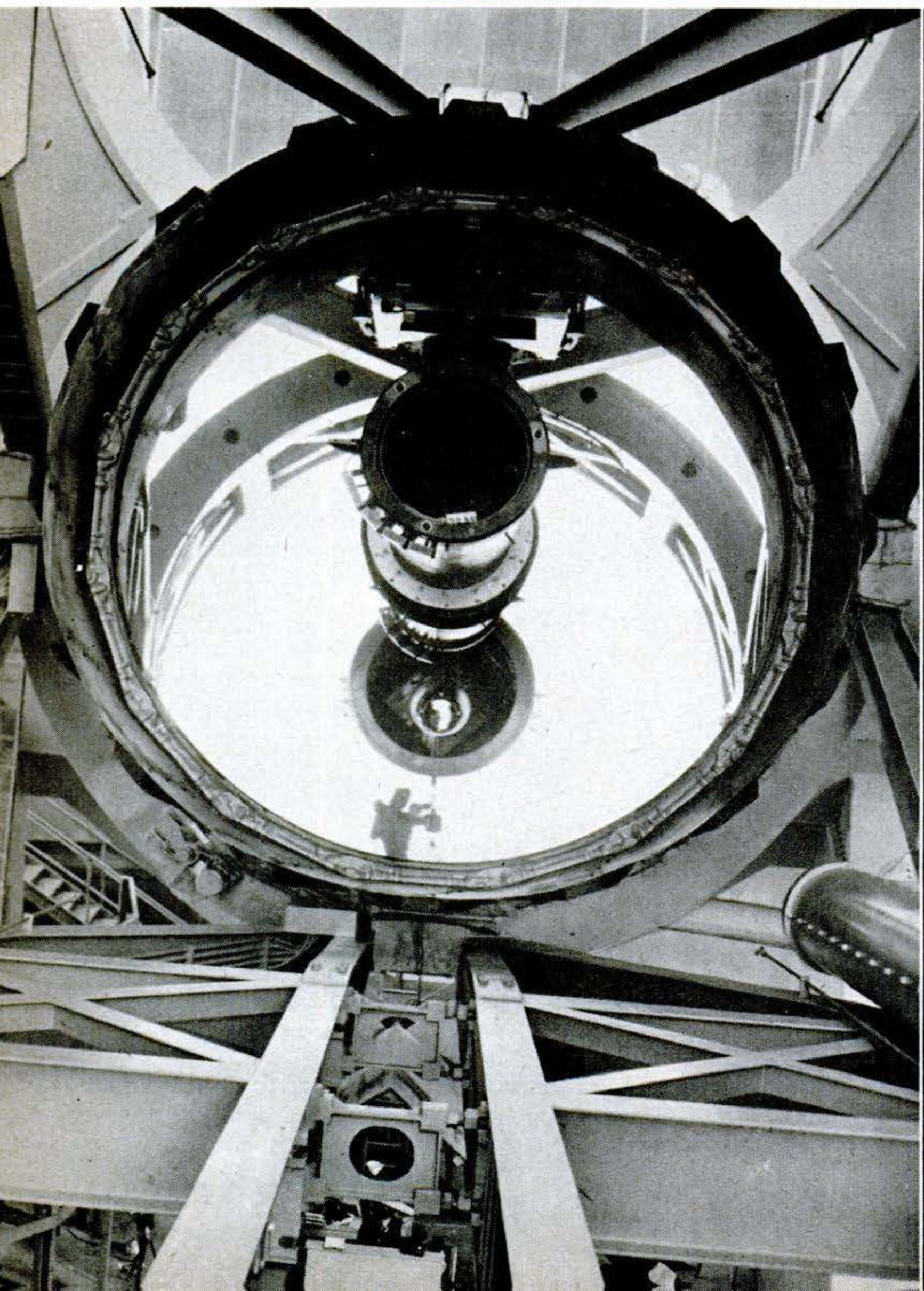
But now he was peering just a little more carefully than usual, for in that year Mars was as close as it ever gets to the earth—35 million miles away.

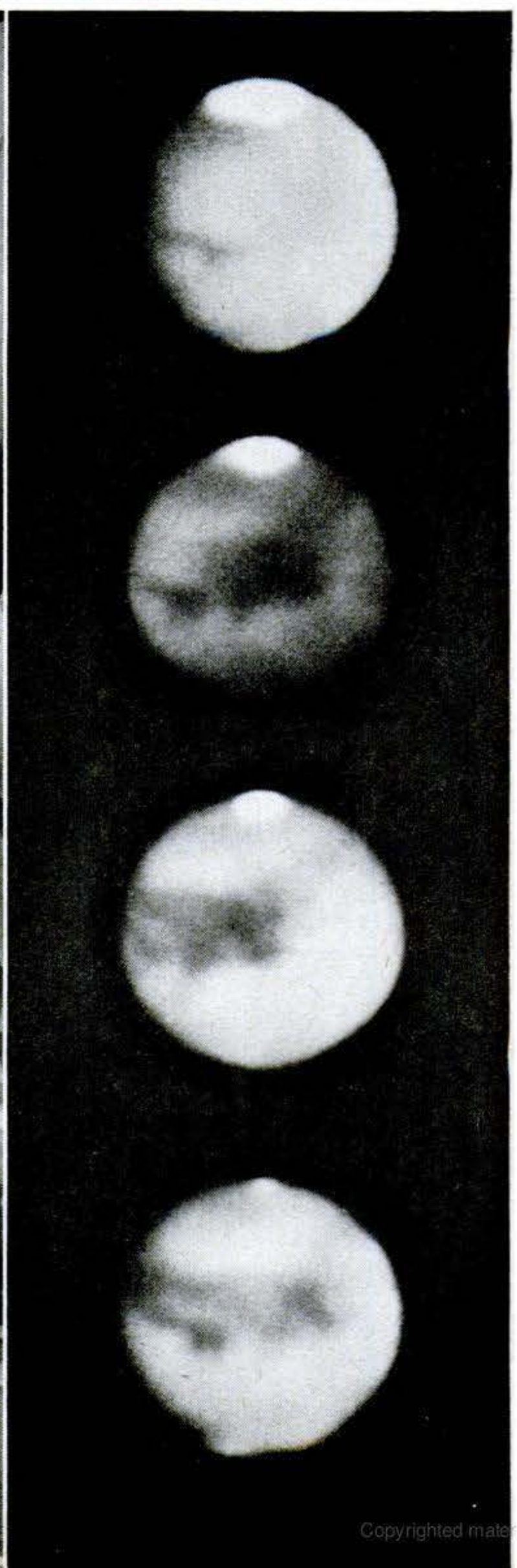
Under perfect atmospheric conditions, Schiaparelli discovered faint, dusky streaks linking the light Martian "land" areas with the darker "seas." These he named *canali*—literally, channels. A surprising feature about the "canali" was their doubling. This occurred particularly, said Schiaparelli, in the months following the melting of the polar cap. In the course of a few days a single dusky line would be transformed into two parallel lines following the original course.

Mistakenly translated as "canals," which implied waterways constructed by intelligent creatures, these *canali* caused millions to speculate on the probability

GIANT SCOPE AT PALOMAR will be mightiest ever trained on Mars. Looking down into it, you see its 200-inch mirror—and a reflection of the photographer who took this picture.

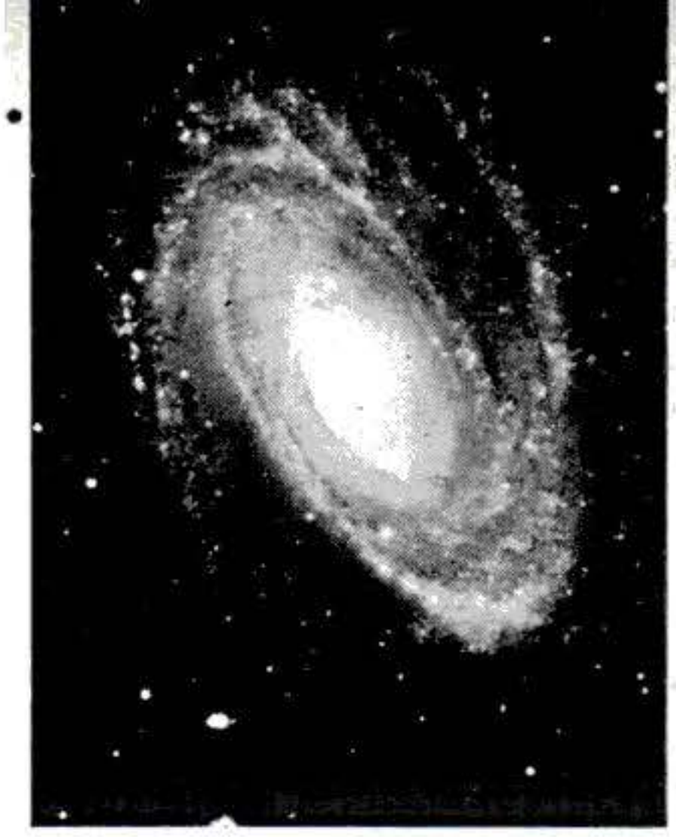
MARS PHOTOS by Lowell Observatory show polar cap (white disk) at intervals from winter to summer (top to bottom). Rapid shrinking suggests it may be less than inch thick.





Copyrighted material

The Odds Favor Life Elsewhere



SOMEWHERE in space are no less than 1,000,000,000,000,000 (one quadrillion) worlds whose chemicals make them habitable, estimates Dr. Harold C. Urey, famed University of Chicago chemist. Countless duplicates of our solar system may exist both in our own galaxy, the Milky Way, and in others like the spiral nebula pictured at right. While actual appearance of life may be a rare accident—even where all conditions are suitable—the odds against the Earth's being the only peopled planet are literally astronomical.

of life on Mars. Schiaparelli himself said: "Their being drawn with absolute geometrical precision, as if the work of rule or compass, has led some to see in them the work of intelligent human beings, inhabitants of the planet. I am very careful not to combat this supposition, which includes nothing impossible."

But his discovery set off sparks that caught fire in America. A rich, brilliant young American, Percival Lowell, read of Schiaparelli's findings. Scion of a remarkable New England family of poets, scholars and statesmen, Lowell had been graduated from Harvard with honors in 1876 and was preparing for a diplomatic career by traveling in the Far East when he heard about the *canali*. He decided to devote his fortune and talents to studying the planets, especially Mars.

Observatory Set Up to Solve Riddle

After investigating sites all over the world, Lowell founded his observatory at Flagstaff, Ariz., where the high, dry air promised a minimum of atmospheric disturbances. By 1894, when Mars was again close to the earth, he and his staff were making thousands of observations of the red planet. By the time of his death in 1916, Lowell probably had made more observations on Mars than any other astronomer.

Where Schiaparelli had been doubtful about the canals, Lowell was positive. By 1909 his drawings showed the planet covered with an intricate geometric network of nearly 700 single and double canals. Nor was he shy about interpreting their meaning. "That Mars is inhabited," he said, "we have absolute proof."

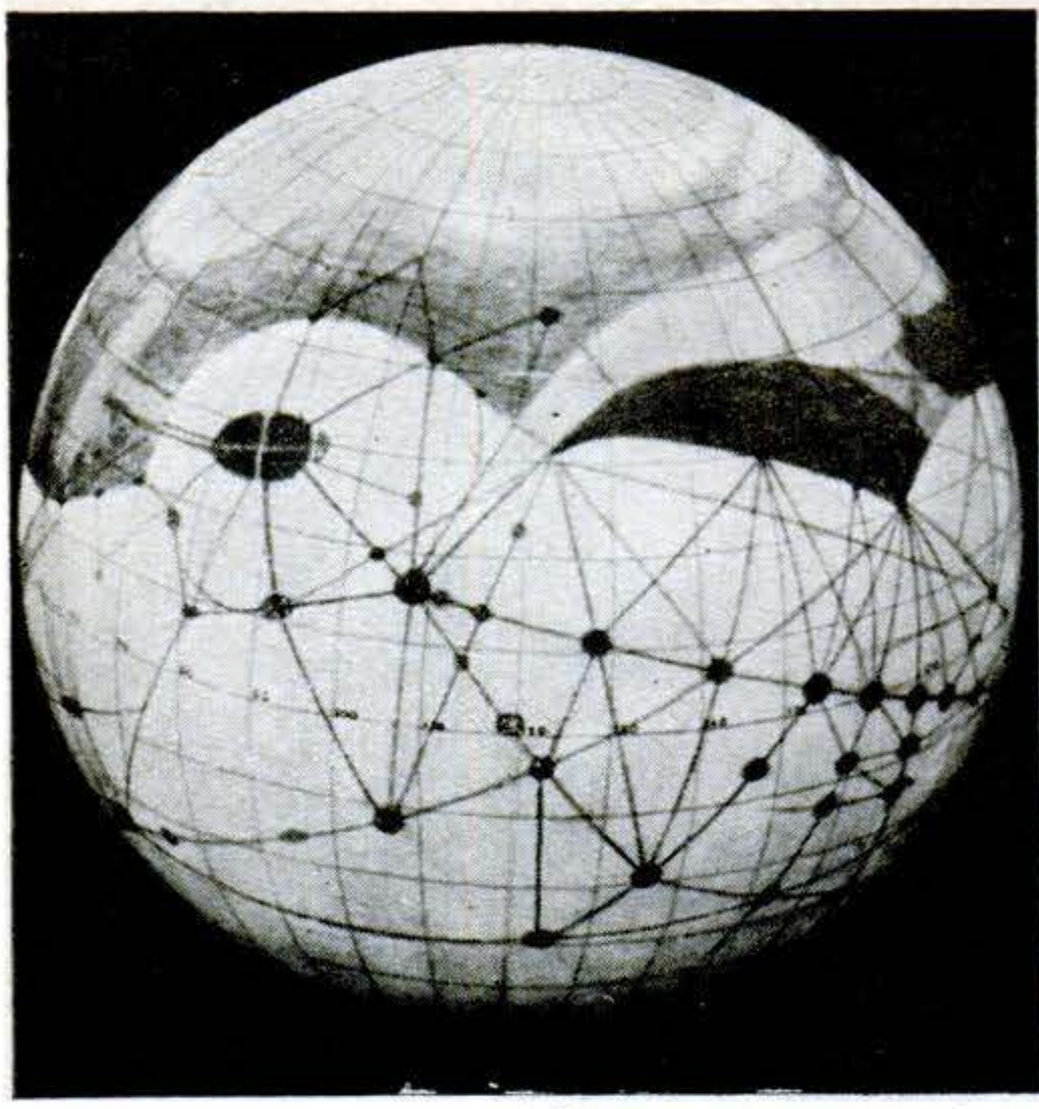
To prove his point Lowell wrote three books, *Mars and Its Canals, Mars As the Abode of Life* and *The Evolution of Worlds*. His arguments were simple but fascinating.

Mars, he believed, is a dying planet. Once the home of a thriving, highly intelligent civilization, the planet now is drying up. The light, ruddy areas of Mars are scorched deserts. Only at the polar caps is there much water left. In a desperate attempt to prolong the fertility of the planet, the Martians have constructed an enormous network of canals. These carry water from the frozen polar caps to the dark irrigated areas where the Martians live. To keep this enormous volume of water moving over tremendous distances, gigantic pumps with 4,000 times the power of Niagara Falls are necessary.

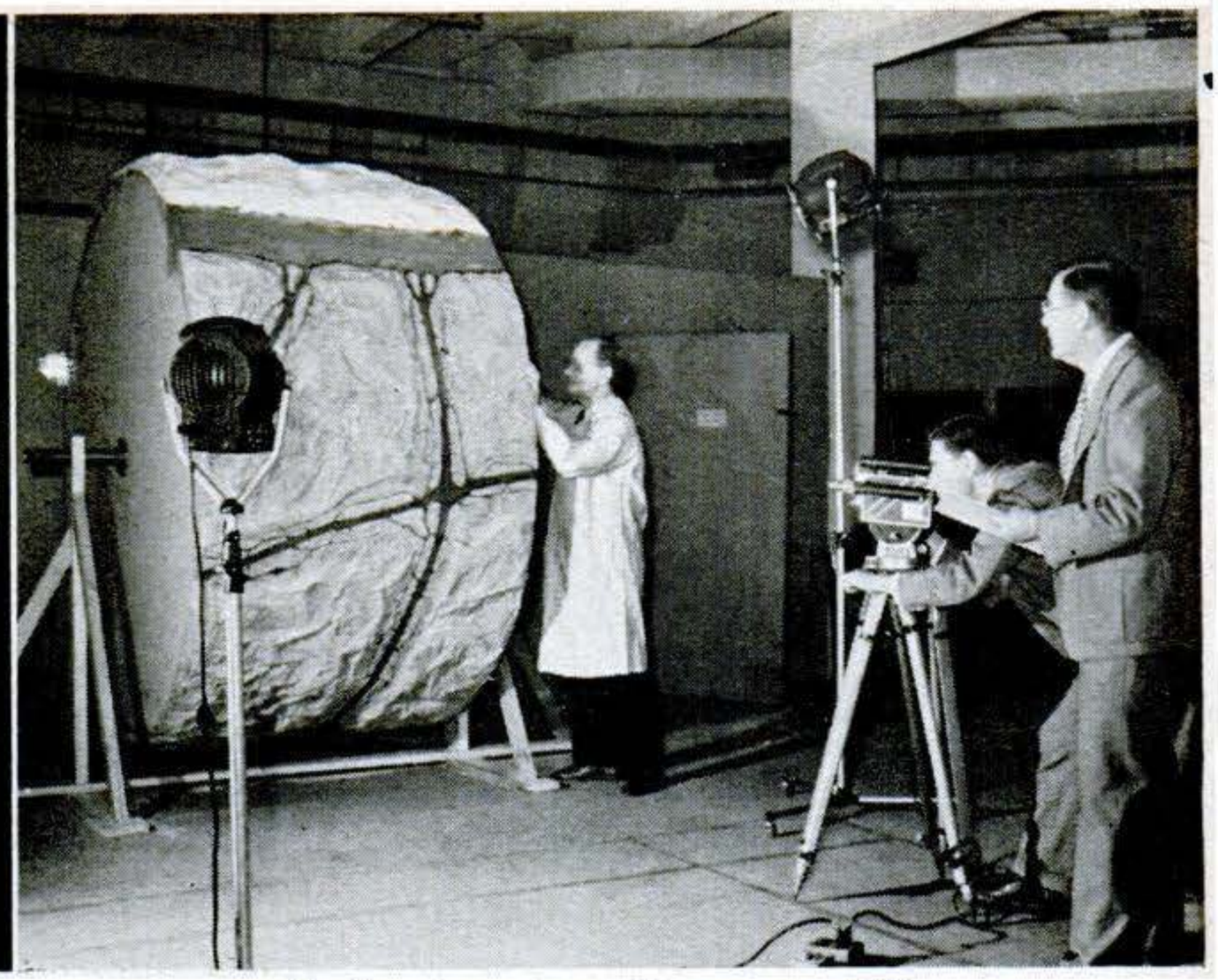
Why Canals Change Color

Lowell had a ready explanation, also, for the seasonal change of color of the canals and the dark areas. Since the smallest details a telescope can make visible on Mars are about 12 miles wide, the canals themselves, he thought, would be too narrow to be visible to astronomers here. What we actually see are belts of irrigated vegetation lining the canals, just as an observer on Mars might be able to see the fertile valleys lining our river banks. As the polar caps melt

Copyrighted material



DISPUTED "CANALS" of Mars are mapped in painting by Percival Lowell, who held them the work of intelligent beings. Others have suggested they may be fissures in crust.



MODEL made by American Museum of Natural History shows how canals may look at closer range. Movie of imaginary trip to Mars is being filmed for a planetarium show.

with the coming of the Martian summer, water is released to flow into the canals and the vegetation advances toward the equator with the moisture.

Lowell's theory set off a controversy that rages to this day. If Lowell were right, in his own words, "The drying up of the planet is certain to proceed until its surface can support no life at all. Slowly but surely time will snuff it out. When the last ember is extinguished, the planet will roll a dead world through space, its evolutionary career forever ended." And presumably the Martians, an intelligent race, would be feverishly hunting around for other planets to which they could migrate. The earth was the closest.

Cameras See the Invisible

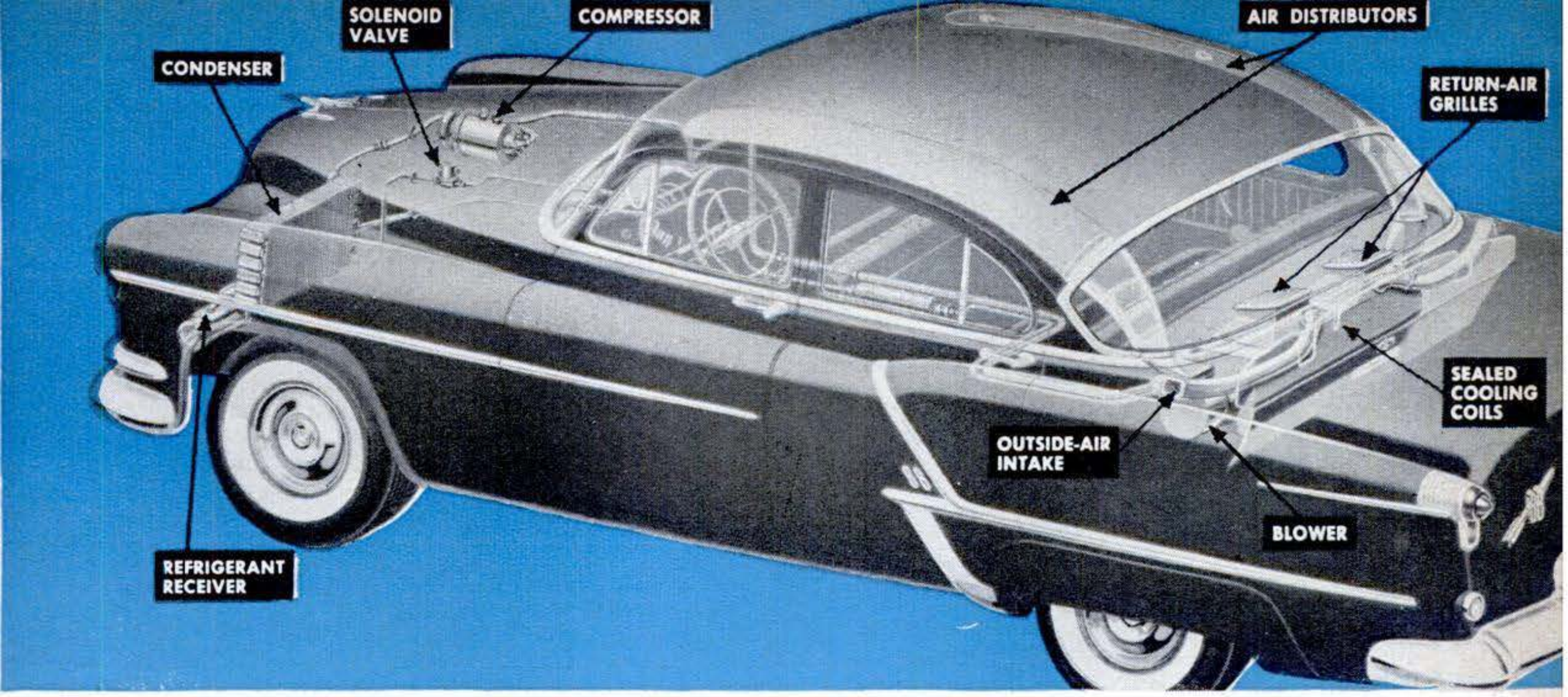
Actually, what does modern astronomical science know about Mars? We know a great deal that Lowell could only guess at. The modern telescopic camera, for example, responds to haze-cutting infrared and short-wave ultraviolet light rays, thus "seeing" objects hidden to rays in the visible spectrum. Using these cameras, three cloud layers have been detected in the Martian atmosphere. The top stratum of bluish-white clouds, six to 19 miles above the surface of the planet, and a thin, continuous stratum of violet haze below it are believed to consist of fine ice crystals. The bottom layer, two to three miles high, consists of yellow clouds, which may be dust or sand stirred up by winds.

These clouds have long proved the existence of a Martian atmosphere, but now we can determine its approximate composition. Light passing through a mixture of gases will have certain of its component colors, different for each gas, absorbed. By analyzing the reflected light from Mars with a spectrograph, we find that the atmosphere has little or no oxygen. Carbon dioxide is the only gas thus far positively detected, although water vapor in small amounts is strongly inferred from the watery nature of the cloud layers and the polar caps. Nitrogen, which in observations of Mars would not show up on a spectrograph, is believed to be the major component of the Martian atmosphere—just as it makes up four-fifths of our own. The Martian atmosphere is very thin, about 1/15 as dense as ours and comparable to our high stratosphere about 13 miles up.

Lowell guessed that the bright, ruddy areas covering two-thirds of Mars were

[Continued on page 260]

Copyrighted material



HERE ARE THE PARTS of the air-conditioning system Frigidaire has built for Oldsmobile, shown as they are located on the moderately restyled 1953 Super 88 four-door sedan.

Refrigerator in Rear Cools New Oldsmobiles

Compact unit powerful as three window-size air conditioners does job . . . 1953 models also have 12-volt electrical system.

By Martin Loveland

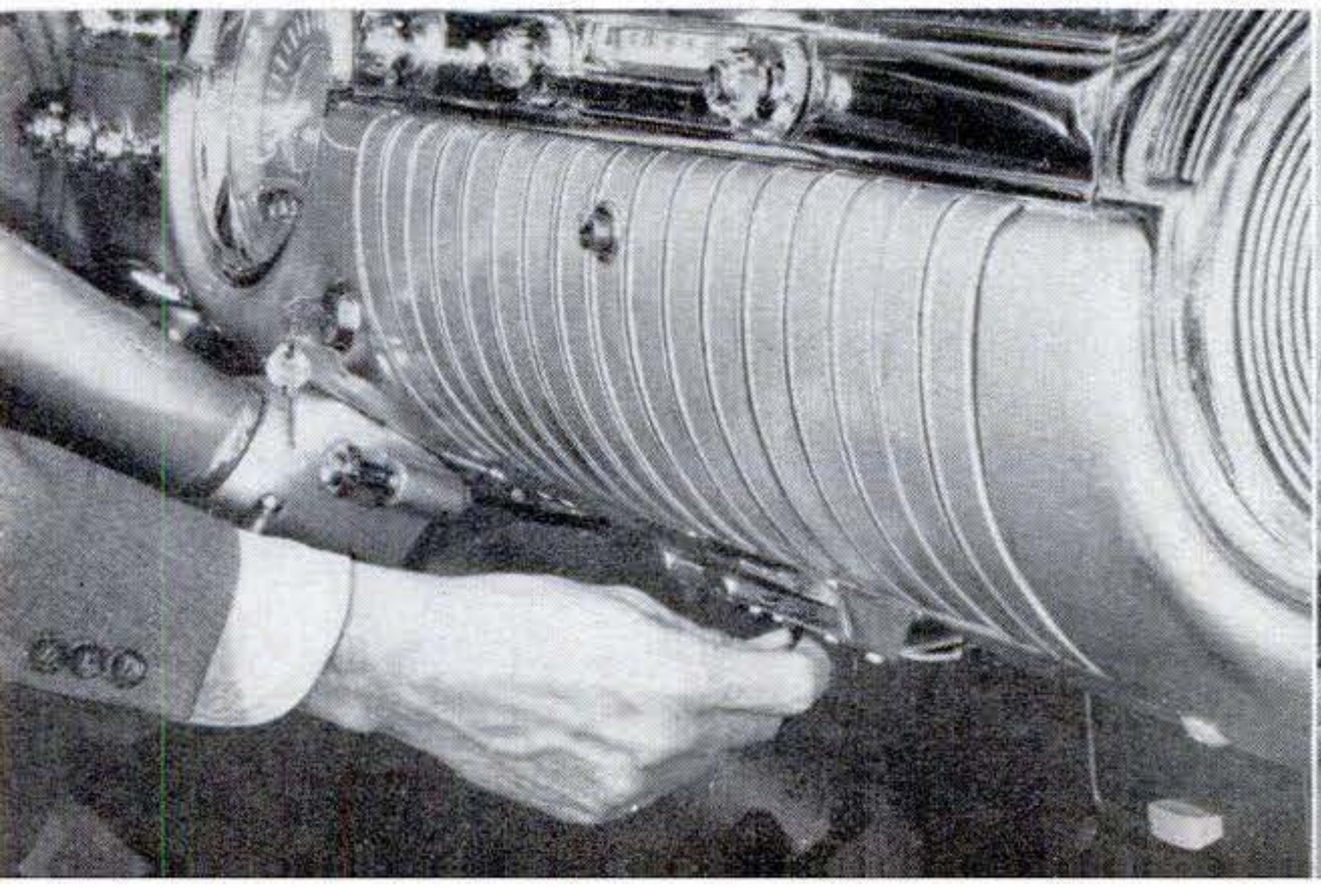
YOUR first glance at a 1953 Oldsmobile is likely to be a double-take. In the corners of the rear window you may see strange-looking objects that you have never seen on a car before—two horn-shaped ducts of clear plastic. They are practically the only visible signs that the car has been air-conditioned.

In any of its new closed models, Oldsmobile—for a few hundred dollars extra—will install an air-conditioning system.

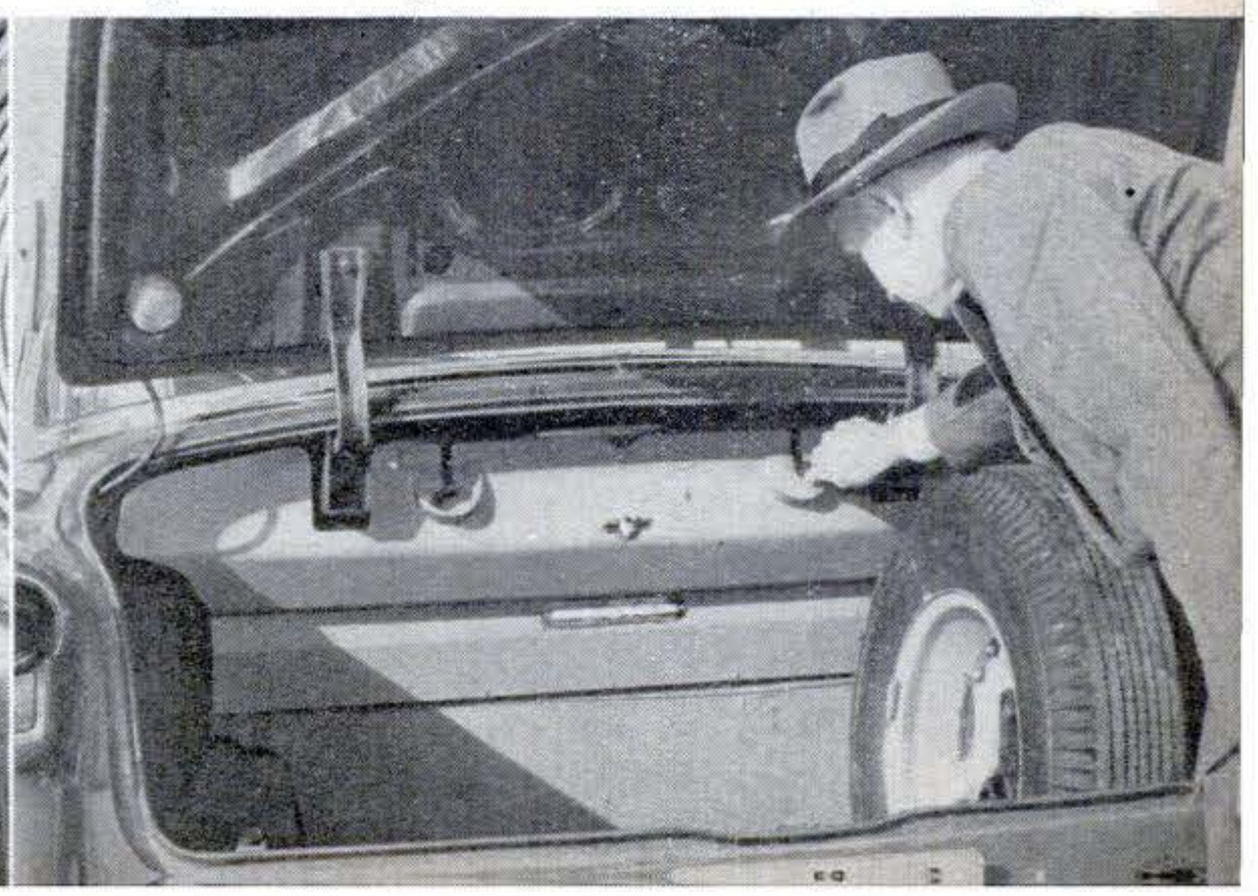
The plastic horns in the rear window carry cooled air from blowers down beneath the package shelf to long, flat, perforated distribution ducts between the roof and the tops of the doors on both sides of the interior of the car.

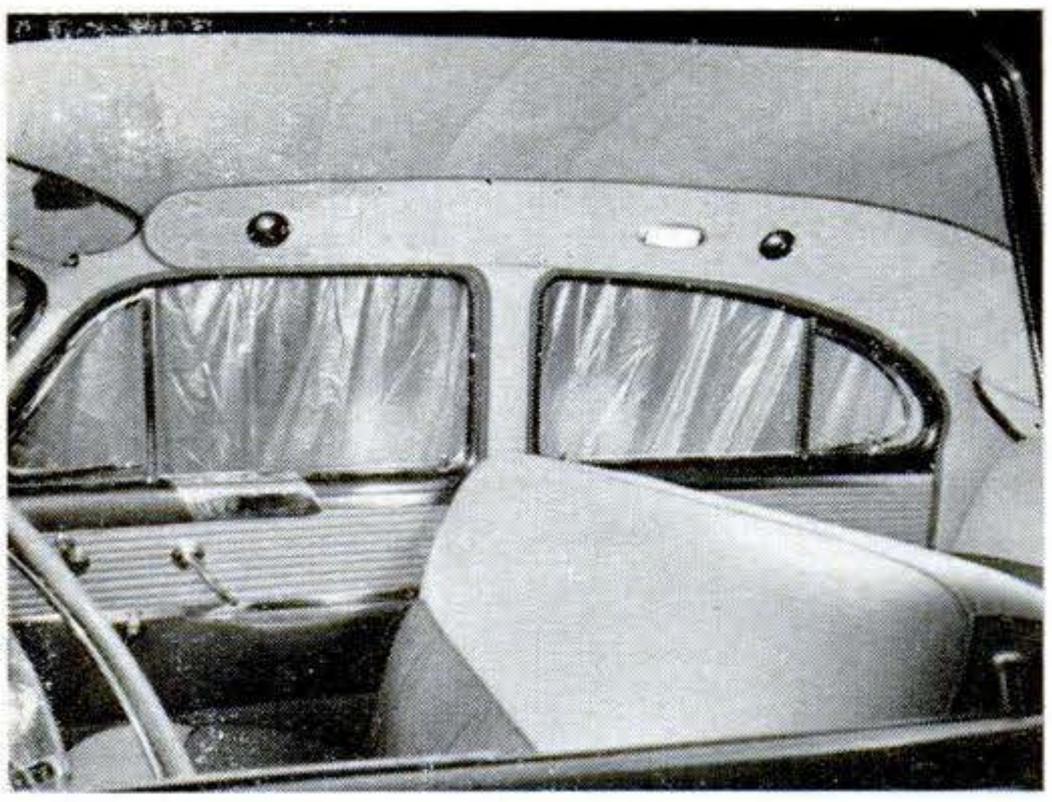
As a result, you can step into an air-

SLIDING REGULATOR for the air conditioner is under the glove compartment. Moving the lever left starts blowers and produces minimum cooling. It is moved right for "cold" air.

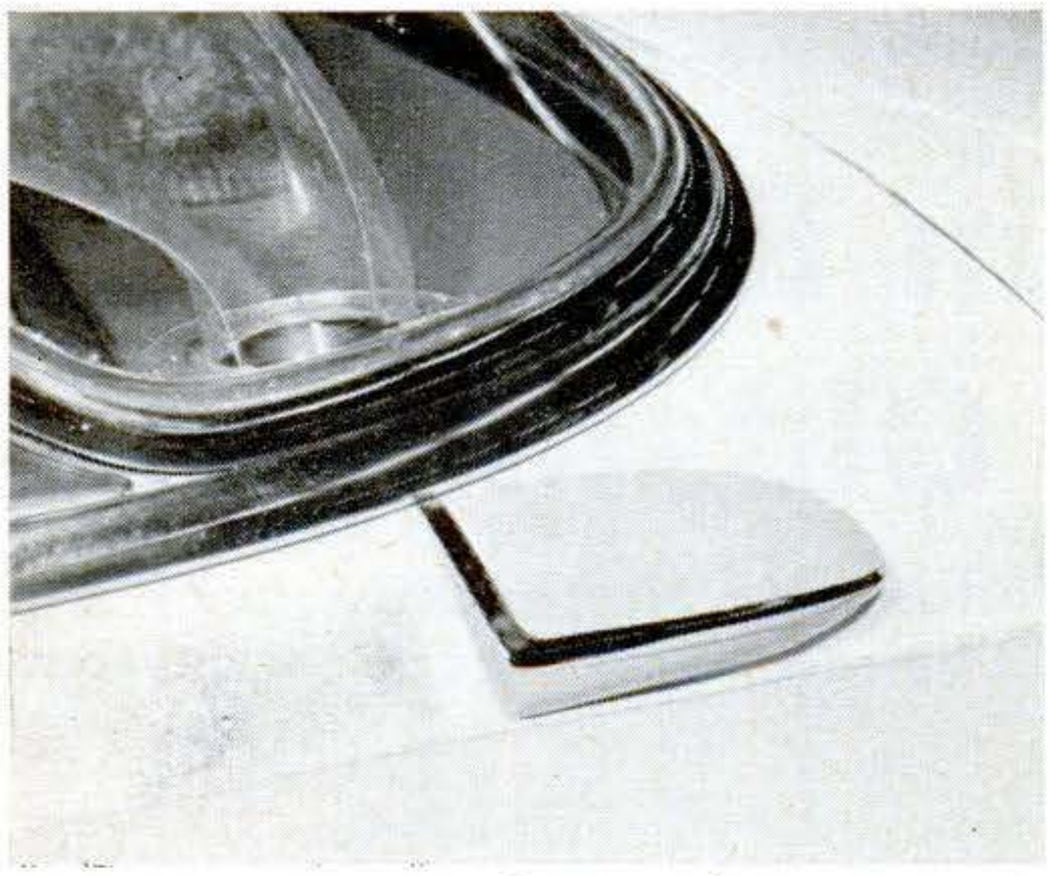


COMPLETELY SEALED refrigeration unit is at the back of the luggage compartment, taking up only a little space. Here the outside-air scoops are being shut off for winter driving.





TINY HOLES—1,500 of them—in the side ducts that distribute cooled air through the car prevent drafts. Airplane-type vents are for those who prefer the air to hit their faces.



ONLY VISIBLE SIGNS of air conditioning in an Olds are horn-shaped plastic ducts rising out of the package shelf, and side air scoops just below the rear window.

ANTIGLARE CRASH PAD made of plastic covering a base of foam rubber is an optional extra for the deck of the redesigned instrument panel. The pad is shown in place above.

conditioned Olds that has been parked for hours in the sun and whose interior heat hits you with a choking gush when you open a door, and within six blocks of driving the car will be 45 degrees cooler. By the time you have gone a mile or two, the inside temperature will be in the soothing 70s. If the day is humid, the moisture will also be squeezed out of the air in your car as it is being cooled.

Uses Only Four Horsepower

At a car speed of 39 miles an hour, the refrigerator gets rid of as much heat from inside the car as it would take to melt 1½ tons of ice. It does as much work as three average window-size air conditioners such as offices use.

Frigidaire, which first built an air-conditioning system for an automobile in 1937 and installed a gasoline engine in the trunk to run it, is making the Oldsmobile apparatus. This is a vastly improved system, which altogether weighs 280 pounds and circulates 300 cubic feet of air per minute inside a moving car. At a car speed of 50 miles an hour, on a very hot day, its compressor, belt-driven off the engine, consumes four horsepower.

A thermostat near the cooling coils, tucked away at the back of the luggage compartment, is normally set to keep the inside temperature between 69 and 71 degrees and the relative humidity in the comfortable area of 25 to 55 percent.

Took Three Years to Get It Right

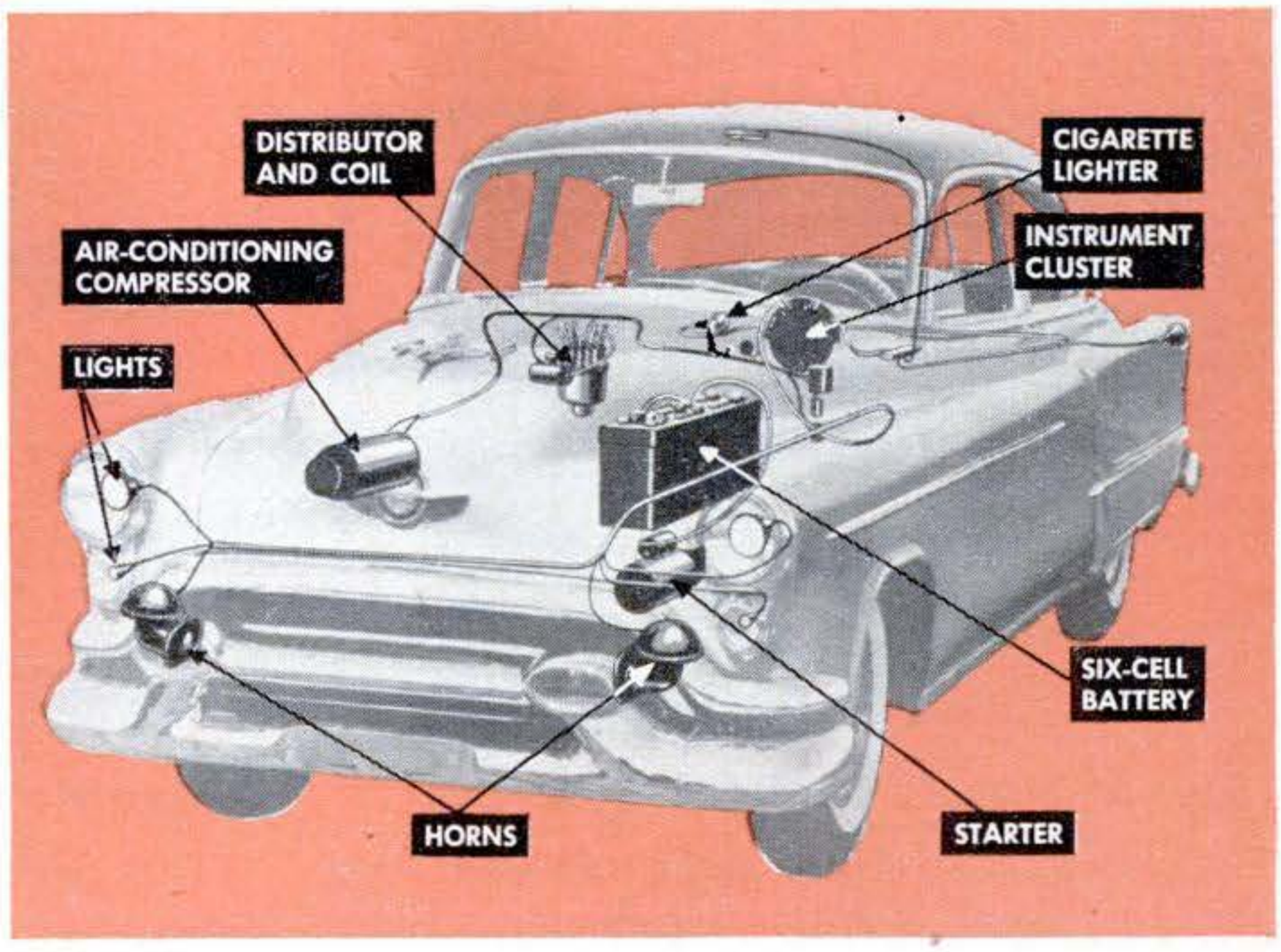
Oldsmobile and Frigidaire engineers have been working out the design of this air-conditioning system for about three years. They have tested versions of it in the hot, humid weather of Tennessee, Georgia and Florida; in the hot, dry climate of Texas, Arizona and New Mexico; and in the heaviest traffic conditions to be found in Michigan, Ohio, Pennsylvania and New York.

One of the biggest problems was that of designing a satisfactory condenser. This part of the system, which dissipates the heat drawn from the interior of the

Copyrighted material

Why New Olds Has 12-Volt Battery

ADDING an air-conditioner was one load too many for Oldsmobile's old six-volt electrical system. So the company switched to a 12-volt battery. This meant changing over all electrical accessories shown at right. Also affected but not shown: generator, heater, radio, clock, Autronic-Eye headlight dimmer. Higher voltage, however, permits use of lighter wiring, saves copper.



car, is a grid of steel pipes and fins that had to be located in front of the regular radiator core. There it was likely to block the engine's supply of fresh air and cause the engine to overheat. In fact, the first condenser designed for the Oldsmobile caused the engine to boil in five minutes of idling and also every time the car climbed a sizable hill.

With the condenser finally achieved—three inches thick, 10 inches high, 21¾ inches wide and weighing 39 pounds—an air-conditioned Oldsmobile can idle for half an hour in 100-degree heat without causing its engine to boil.

With or without air conditioning, Oldsmobile's three 1953 lines provide changes in body styling, a wider choice of colors both outside and inside, and a new 12-volt electrical system. Power brakes and power steering are available at added cost.

The engine of the least expensive line, the De Luxe 88, has been boosted from 145 to 150 horsepower, its compression ratio raised from 7.5:1 to 8:1. The engine of the Super 88 and 98 has been boosted from 160 to 165 horsepower, with the same increase in compression ratio as the smaller engine has. END

FACTS ON '53 OLDSMOBILE

Model: Super 88 four-door sedan.

Engine: V-8 valve-in-head; 165 hp. at 3.600 r.p.m.; compression ratio, 8:1; piston displacement, 303.73 cu. in.; piston travel (in feet per car mile at 20 m.p.h.), 1,329; bore and stroke, 3¾" by 3 7/16"; crankshaft bearing surface, 73.9 sq. in.; torque, 284 lb.-ft. at 1,800 r.p.m.

Weight: 3,704 lb.; per hp., 22.45 lb.

Transmission: Hydra-Matic; rear-axle ratio, 3.23:1.

Steering ratio: 21.3:1; radius of turning circle, 21.25'.

Effective brake-lining area: 191.7 sq. in.

Springs: front, coil; rear, leaf.

Outside dimensions: height, 63.63"; overall length with bumpers and guards, 203.15"; width, 76.94"; wheelbase, 120"; overhang, front 34.50", rear 48.65"; tread, front 59", rear 59".

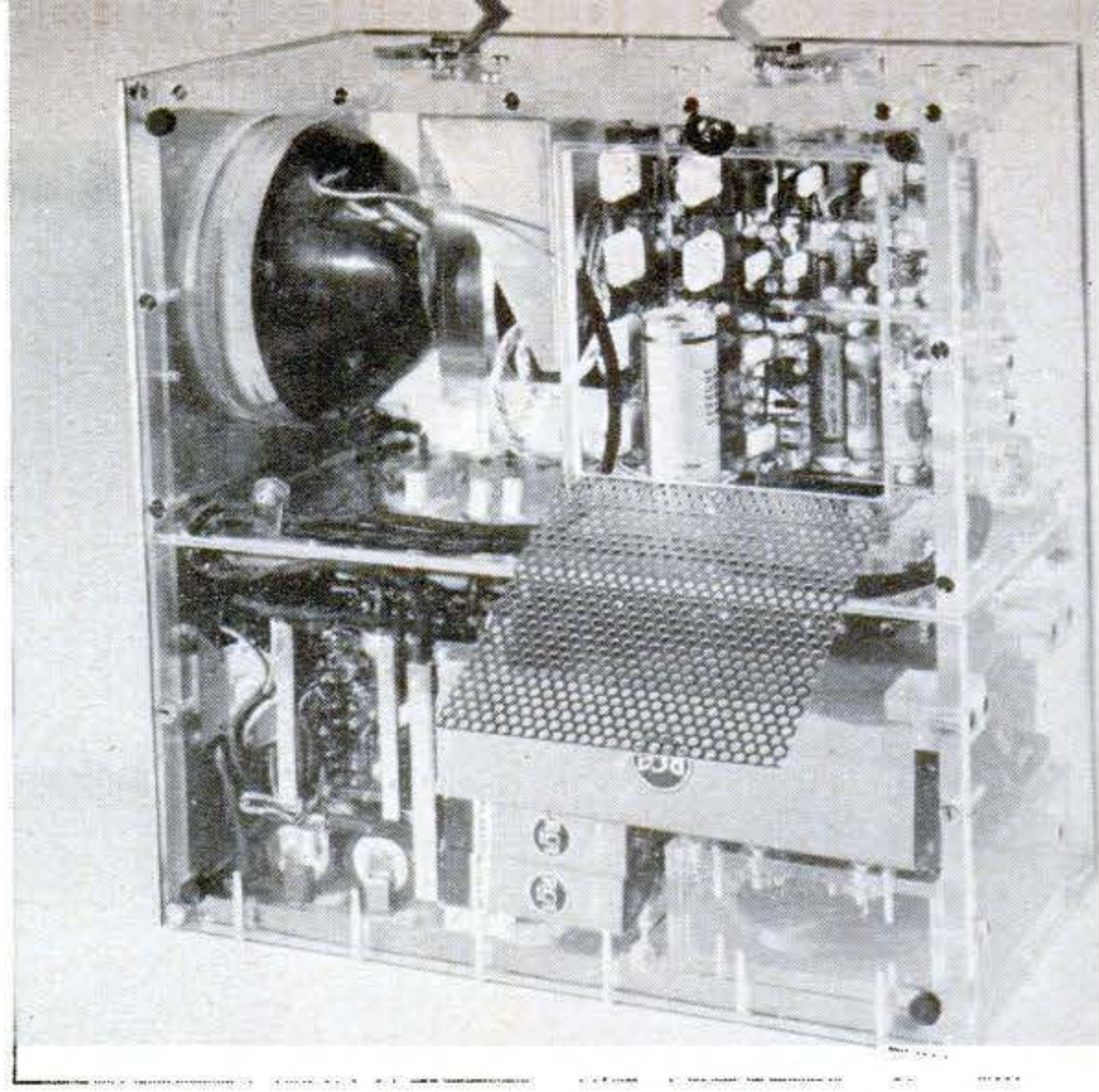
Inside dimensions: seat-cushion width, front 63.08"; rear 64.24"; leg room, front 42.66", rear 43.32"; headroom, front 35.38", rear 34.95"; seat height, front 13.68", rear 12.45"; vertical distance, steering wheel to seat cushion with seat in mid-position, 4.90"; front-seat adjustment, horizontal 4.40", vertical .34".

Tire size: 7.60 by 15.

Copyrighted material

Sweat Box Is Icebox, Too

GUIDED-MISSILE parts get either a hot foot or a cold shoulder in this test chamber. With electric heaters turned on, temperature climbs to 250°. But it drops fast to 100° below when a solution of alcohol cooled by liquid carbon dioxide is circulated. The rapid temperature change lets Northrop engineers run many tests a day.



Portable TV Weighs 27 Pounds

THIS experimental battery-operated TV set uses transistors and has no tubes except the five-inch picture tube. During tests of the single-channel receiver, a built-in loop antenna brought in satisfactory pictures five miles from the nearest TV tower. Addition of a "rabbit-ear" antenna to the RCA set increased its range to 15 miles.

They Say Now.....

"The engineer—by the deadly efficiency of the machines he has created—may actually have contributed to the outlawing of war."—COL. E. R. HEIBERG, U.S. MILITARY ACADEMY.

"The upper limit of age predetermined by our species has never been reached by a majority or even by a considerable minority of individuals."—DRS. RAPHAEL GINZBERG AND V. OLSVARY, MENTAL HEALTH INSTITUTE, CHEROKEE, IOWA.

"[Someday] we will raise our fuel just as we did when we used horses. One acre ought to run an automobile for a year."—CHARLES F. KETTERING, GENERAL MOTORS.

You Spray on This Bandage

A PLASTIC surgical dressing that can be sprayed on has been developed by the Air Force. Called Aeroplast, it is applied in a coating about five thousandths of an inch thick. During healing, the burn or wound under the transparent dressing can be inspected at a glance and, if necessary, the plastic can be peeled off without injuring the wound. It adheres only to dry, healthy skin areas.

Copyrighted material

Parking Wheel Rolls Car Sideways into Tight Spots

THE old saw about a "fifth wheel" may soon lose its punch. The car above sidles its way into a tight spot in a few seconds on wheel number five, the spare. The car is nosed toward the curb, and a control lowers the extra wheel hydraulically from the trunk. It raises the rear of the car, then rolls it crabwise to the curb. Brooks Walker, San Francisco inventor of the Parccar, hopes to sell it to auto makers.

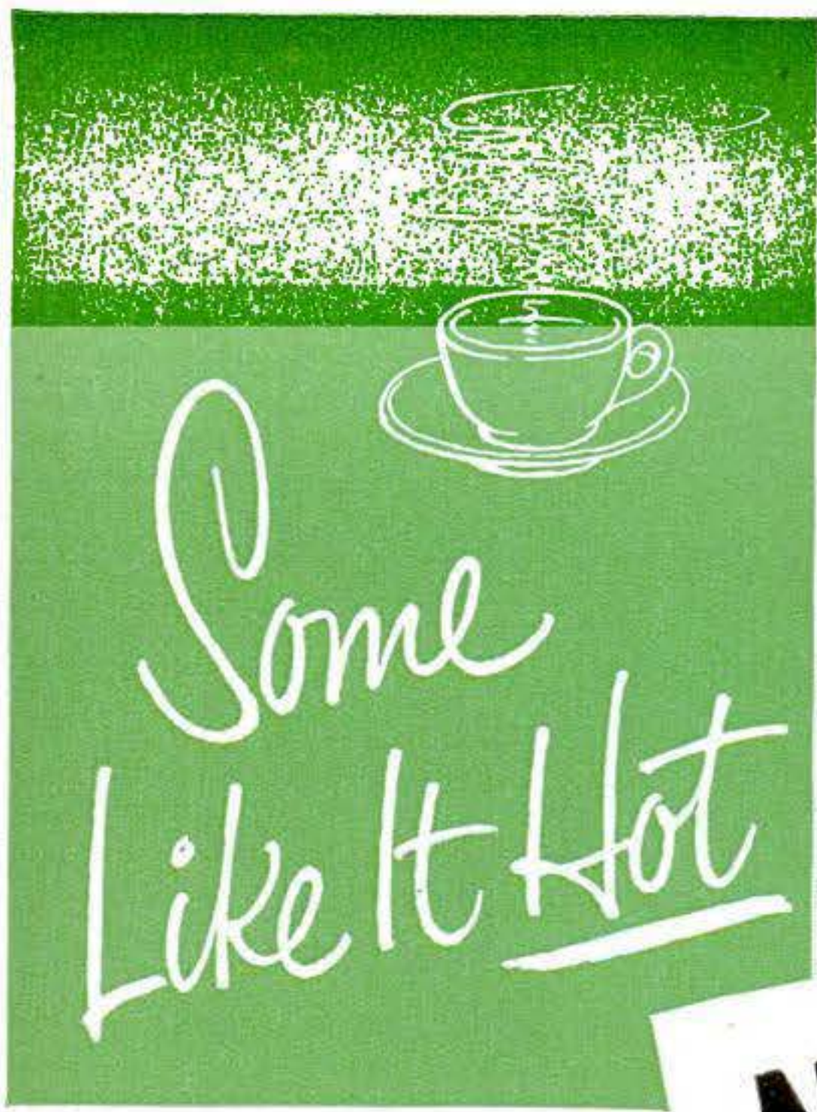
Pen Has Jewel Point

YOU write with sapphire when you write with this pen. A tiny synthetic gem, machined until it is off-round less than one two-millionths of an inch, forms the ball point. Sapphire is said to have a special affinity for ink so the liquid flows over it more evenly than over a steel or other metal ball. The pen is made by Waterman.

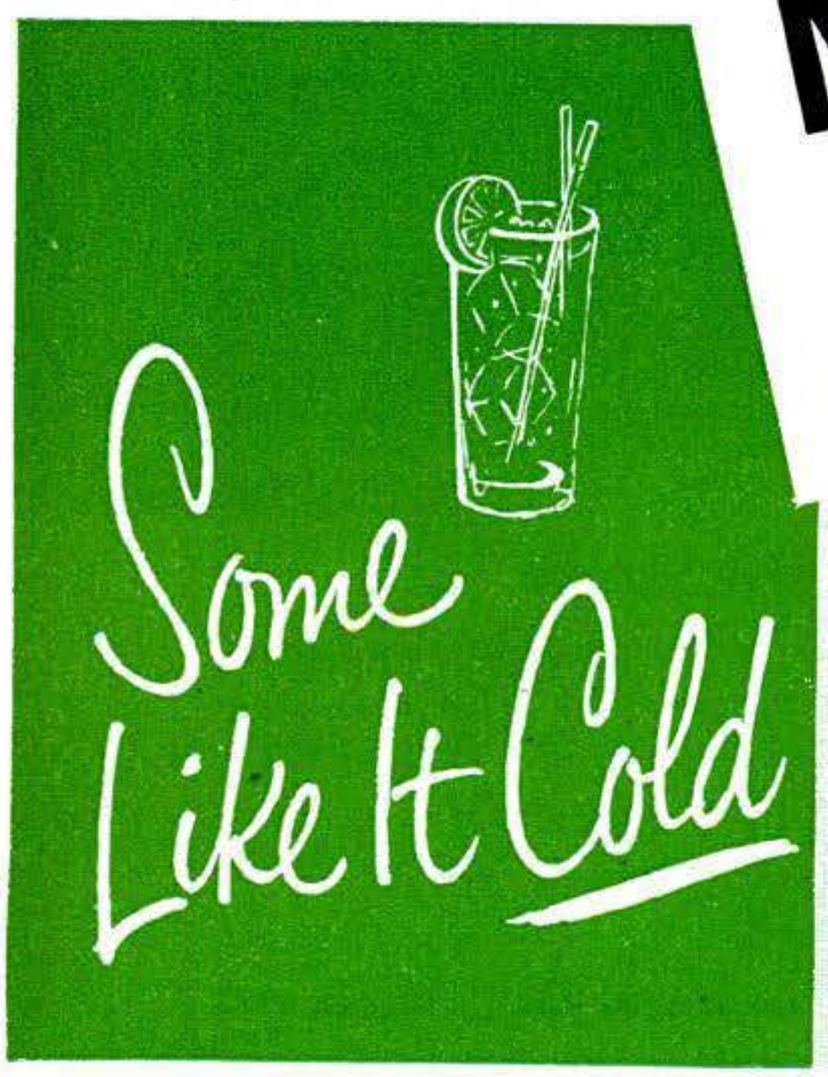
Baby Porkers Get Milk on Tap

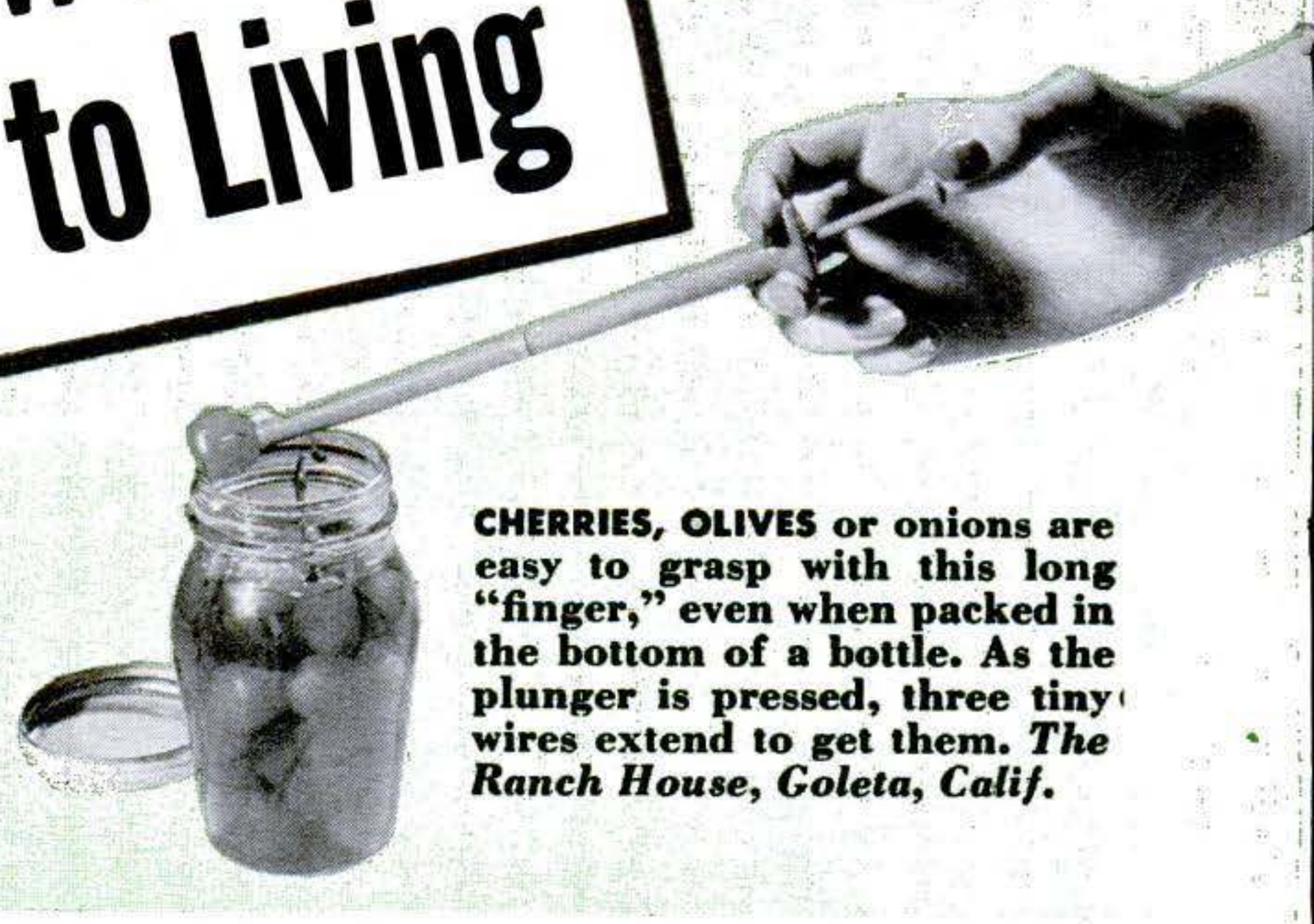
THESE five-week-old piglets never miss their absent mama. A 14-tap heated feeder supplies them with milk and added nutrients. John Percy, an English pig breeder, designed it to wean baby pigs from the sow after two days instead of eight weeks. British farmers hope it will increase the pork-chop and bacon output in England.

New Aids to Living

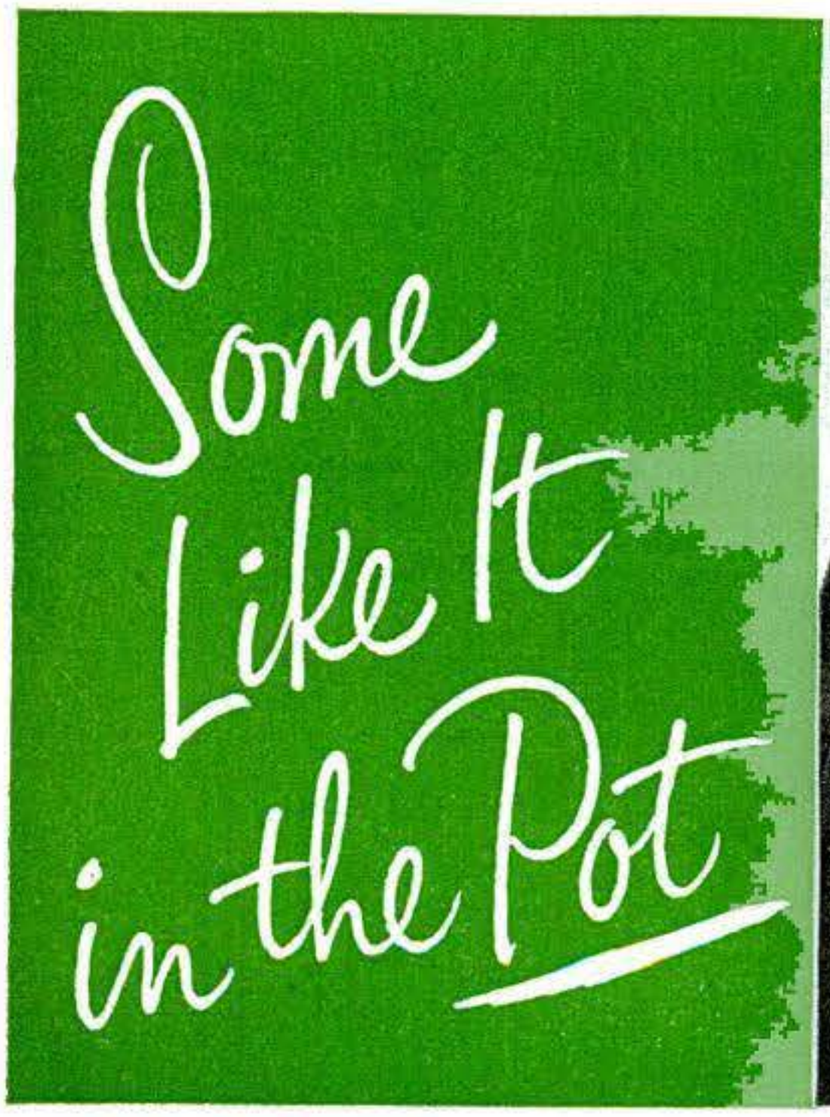


DRIP COFFEE stays hot in this electric coffee maker. During brewing, water stays in top unit (not shown) until it reaches right heat for good coffee flavor. *Dulane Inc., River Grove, Ill.*





CHERRIES, OLIVES or onions are easy to grasp with this long "finger," even when packed in the bottom of a bottle. As the plunger is pressed, three tiny wires extend to get them. *The Ranch House, Goleta, Calif.*



SOUP STAYS HOT for hearty second helpings when made in electric cooker, which plugs in at the table. It also deep-fries, turns out casseroles, steams food, pops corn or heats the rolls. *Sunbeam Corp., Chicago.*

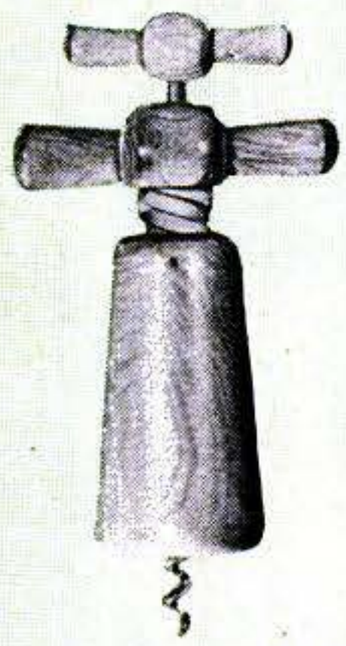
Copyrighted material

TEA BREWS in removable infuser, stays hot an hour in insulated teapot. *Teamakers, Inc., Chicago.*

COFFEE FOR 24 can be perked in this electric urn. *La Belle Silver Co., Glendale, N. Y.*

A CRADLE for your coffee maker, this coffee butler makes pouring easy. Alcohol burner keeps brew hot. *JSM Associates, NYC.*

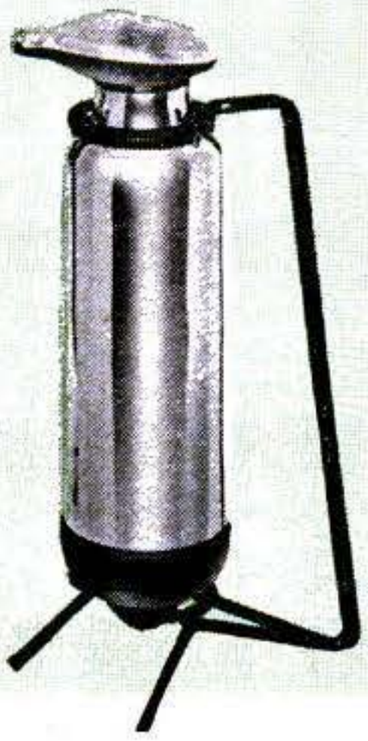
FROZEN DRINKS and frappes are set up in jig time with ice plane below. Just shave it across ice frozen in a tray without dividers. *Miles Kimball Co., Oshkosh, Wis.*



WINE CORKS yield fast to this tool. Top handle engages cork, lower one eases it out whole. *Louis Dups, Inc., NYC.*

GLASSES, beer cans or pop bottles all nest securely in these rubber coasters. The starlike prongs hug the container tightly. *House of Bertram, Scarsdale, N. Y.*

HOT MILK at bedtime or cold drinks on the terrace will hold their temperature in a vacuum-bottle drink caddy. *Wiederspan & Mohr, Denver.*



EGGS SEPARATE cleanly in a special cup. Yolks sit on lid well, whites drip through slots into the cup below. *Ett-Barr Co., Pasadena, Calif.*

ANY SCREW-CAP BOTTLE will give up meekly when gripped with this rubber cap remover. *Universal Sales Co., Portland 13, Ore.*

Copyrighted material

1 WHEN A PERSON INTERCEPTS THE CROSS BEAM OF LIGHT, A RELAY IN THE DOOR OPERATOR CAUSES THE DOOR TO OPEN TO ITS FULLEST EXTENT. THE DRAWING ON THE OPPOSITE PAGE SHOWS HOW IT IS DONE.

3 THE DOOR REMAINS OPEN AS LONG AS THE DIAGONAL BEAM OF LIGHT IS INTERRUPTED. WHEN THE BEAM IS NO LONGER INTERRUPTED, THE DOOR BEGINS TO CLOSE. AS THE DOOR STARTS TO SWING BACK, AND BEFORE IT CAN INTERRUPT THE DIAGONAL BEAM ITSELF, A MICROSWITCH IN THE OPERATOR TURNS OFF THE DIAGONAL BEAM.

DOOR OPERATOR

CONTROL POST, WHICH CONTAINS TWO PHOTO-ELECTRIC CELLS, ONE FACING EACH LIGHT SOURCE (SEE SMALLER DRAWING BELOW).

BARRIER ROPE. THIS STRETCHES TAUT WHEN THE DOOR IS CLOSED, THUS WARNING PEOPLE AWAY FROM THIS SIDE OF DOOR.

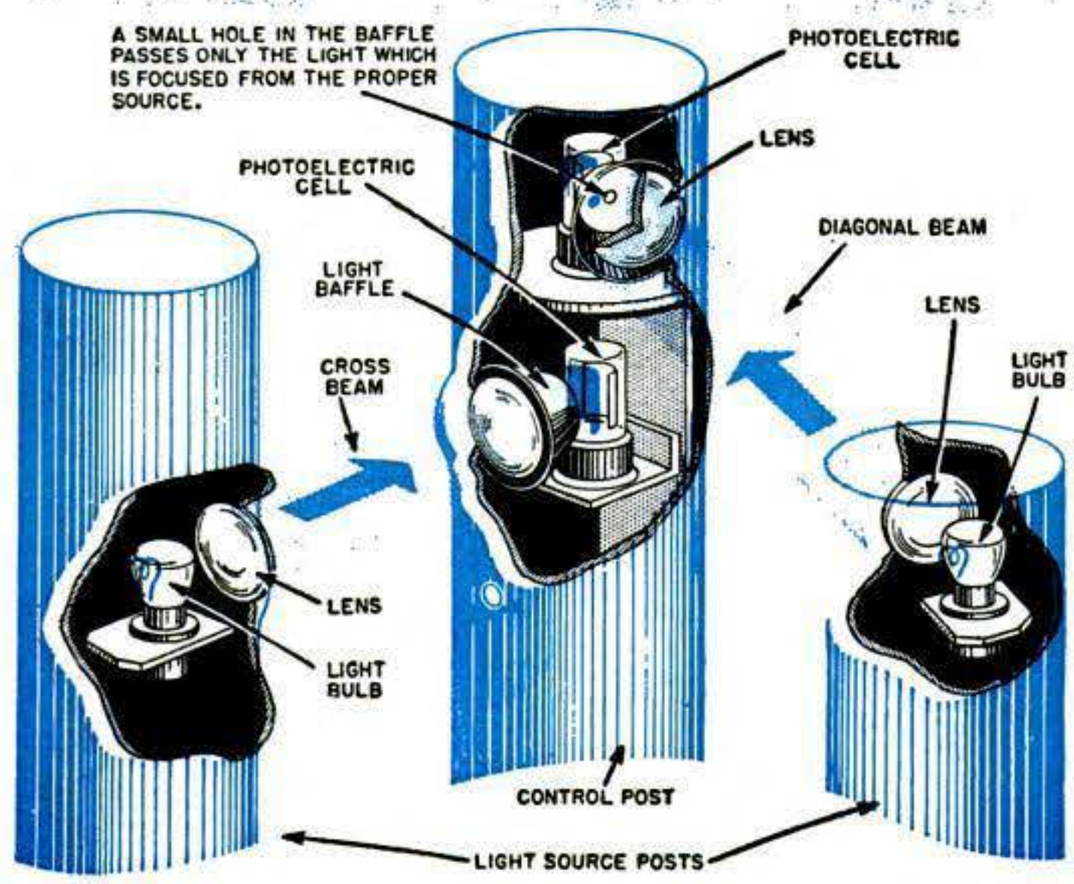
SOURCE OF CROSS BEAM OF LIGHT

CIRCUIT CONNECTIONS

SOURCE OF DIAGONAL BEAM OF LIGHT

2 WHEN THE DOOR IS PART WAY OPEN, A MICRO-SWITCH INSIDE THE OPERATOR TURNS ON THE DIAGONAL, OR SAFETY, BEAM OF LIGHT.

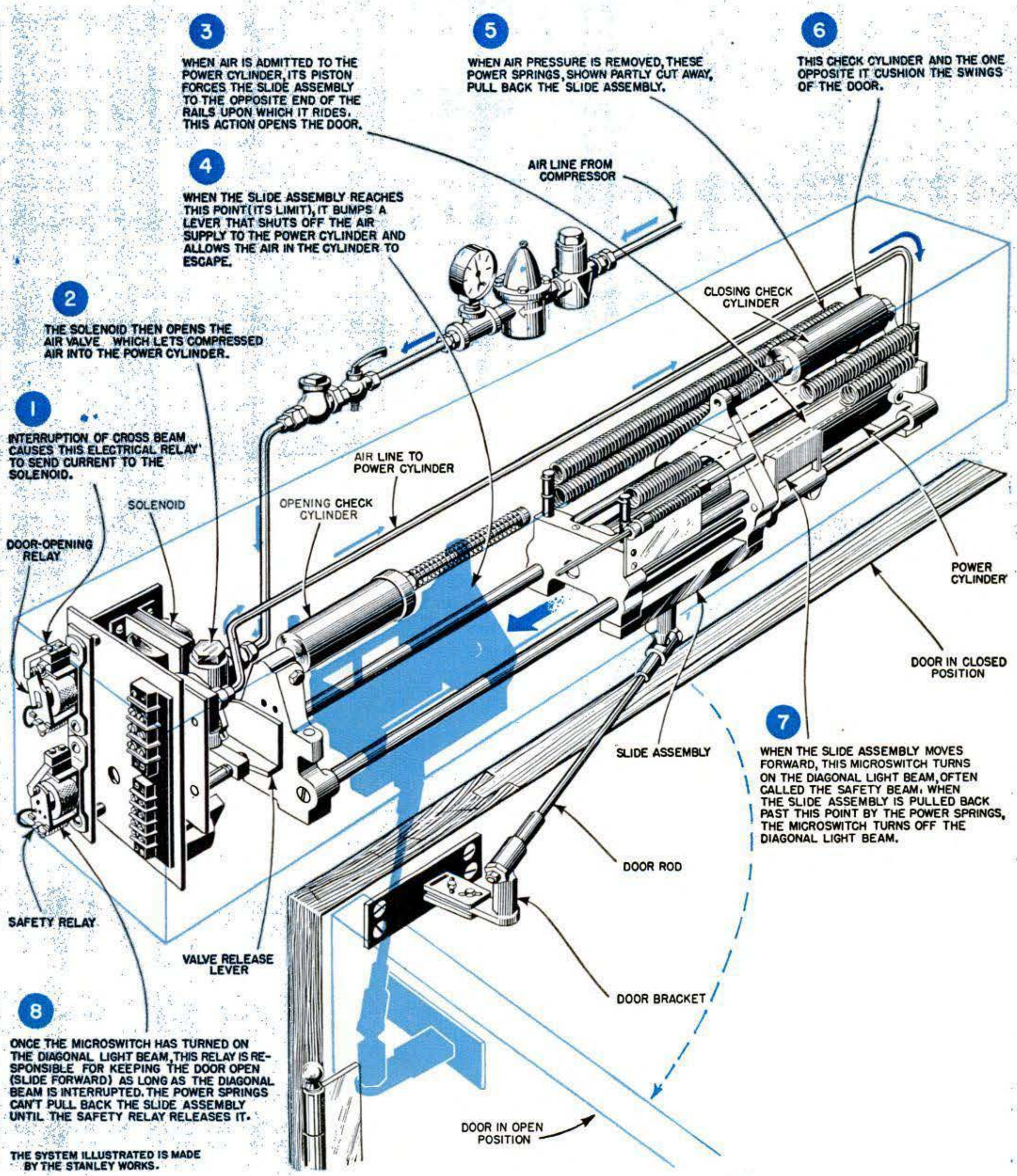
AN ALTERNATE CONTROL SYSTEM FOR THE DOOR OPERATOR IS A PAIR OF VINYL PLASTIC CARPETS CONTAINING ELECTRIC-CONTACT SHEETS. STEPPING ON THE "OPENING" CARPET CAUSES THE OPERATOR TO OPEN THE DOOR. THE DOOR STAYS OPEN WHILE THE PERSON IS CROSSING THE SECOND, OR "SAFETY", CARPET.



Copyrighted material

How an Electric-Eye Door Works

MECHANICS OF LIVING



THE SYSTEM ILLUSTRATED IS MADE BY THE STANLEY WORKS.

Copyrighted material

Science Goes Fishing Through the Ice

Expedition flew to Labrador, used helicopter and ski-equipped lightplane to ferry supplies.

ONE reason the Northeast's winters are so rugged is an icy river in the ocean—the Labrador Current, which streams down between Greenland and Baffin Island to strike the warm Gulf Stream below Newfoundland and divert it eastward.

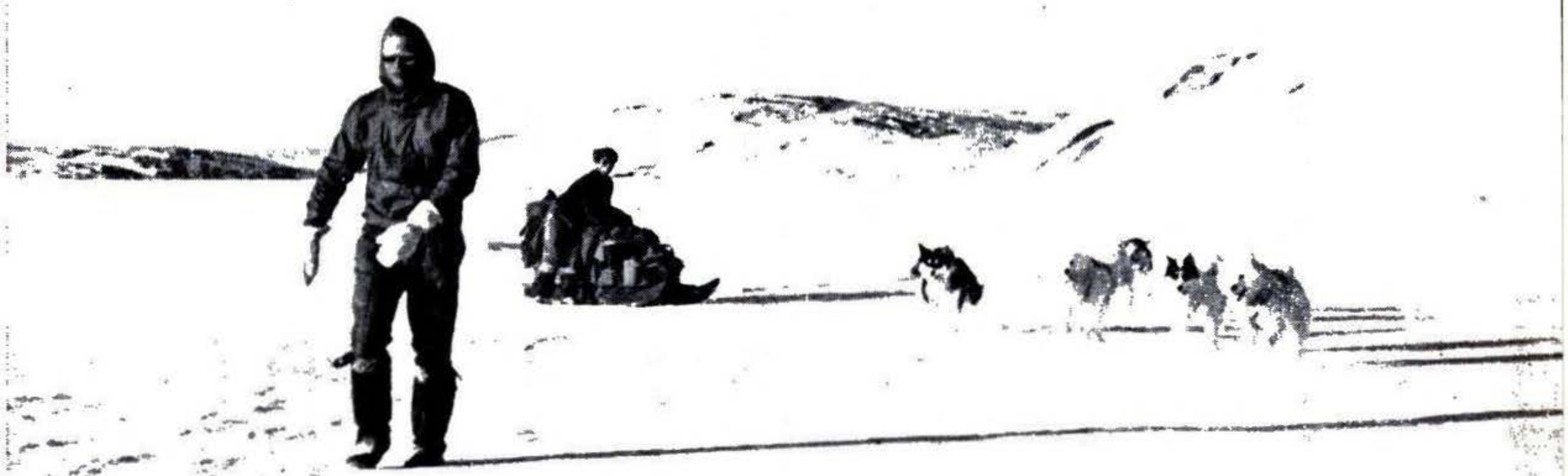
Weather scientists now know more about the Current because three men went "ice fishing" on Lake Melville, a salt-water tidal lake in Labrador, last winter. Their lines bore no hooks, but lowered through holes in the ice instruments like bathythermographs, Nansen bottles and thermometers. Instead of fish they brought back water samples and data on deep-sea temperatures, saltiness and oxygen content. Their findings are expected to help trace the Current's course and thus explain more of its effect on our weather.

Headed by 32-year-old Cmdr. David C. Nutt, USNR, of the Dartmouth College Museum, the expedition included assistant John Tangerman and guide Harvey Montague. Data went to Office of Naval Research.

FIRST STEP in setting up the oceanographic station was cutting ice hole through which scientists went "fishing." Below, Montague wields chisel as Commander Nutt skims off slush.

Copyrighted material

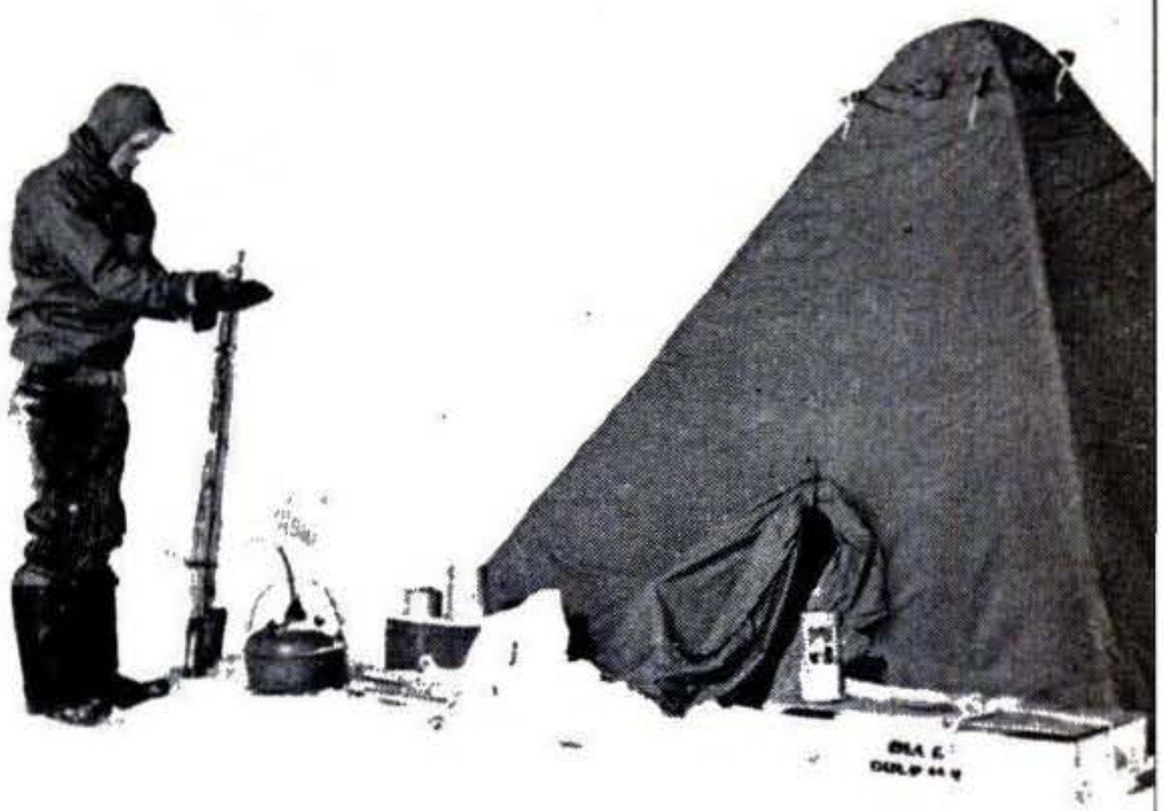
A young explorer's three-man expedition probes the icy Labrador Current that flows down into the Atlantic and vitally influences our weather.



Last leg of trip to "fishing" spots on frozen Lake Melville required old-fashioned dog sled.

PYRAMIDAL TENT FRAME served as derrick to lower instruments more than 600 feet below the ice. Tangerman is reading thermometer on Nansen bottle containing water samples.

DURING EXTREME COLD the work went on inside covered tent heated by a small gasoline stove. At night, tent was moved away from ice hole and the three men slept in it.

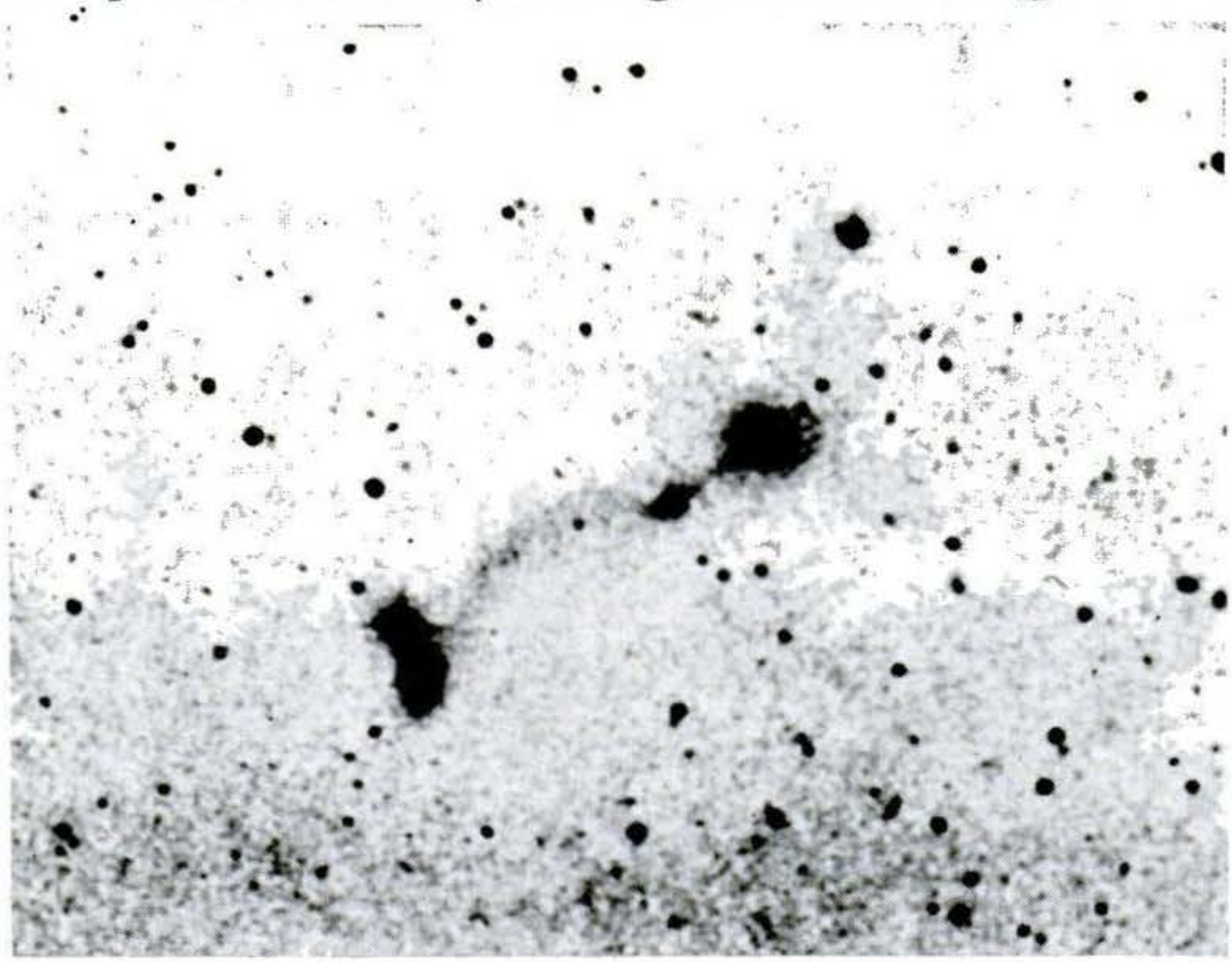


Copyrighted material

Huge Boring Mill Helped Build World's Biggest Air Compressor

ANCHORED to a 16-foot-thick block of concrete, this boring mill measures 40 feet across. It was used at the Westinghouse plant in Sunnyvale, Calif., to shape giant slabs of steel into the largest piece of rotating equipment ever made—an air compressor for the U. S. Air Force wind tunnel at Tullahoma, Tenn.

Bridge Between Starry Islands Is 72,000 Light-Years Long

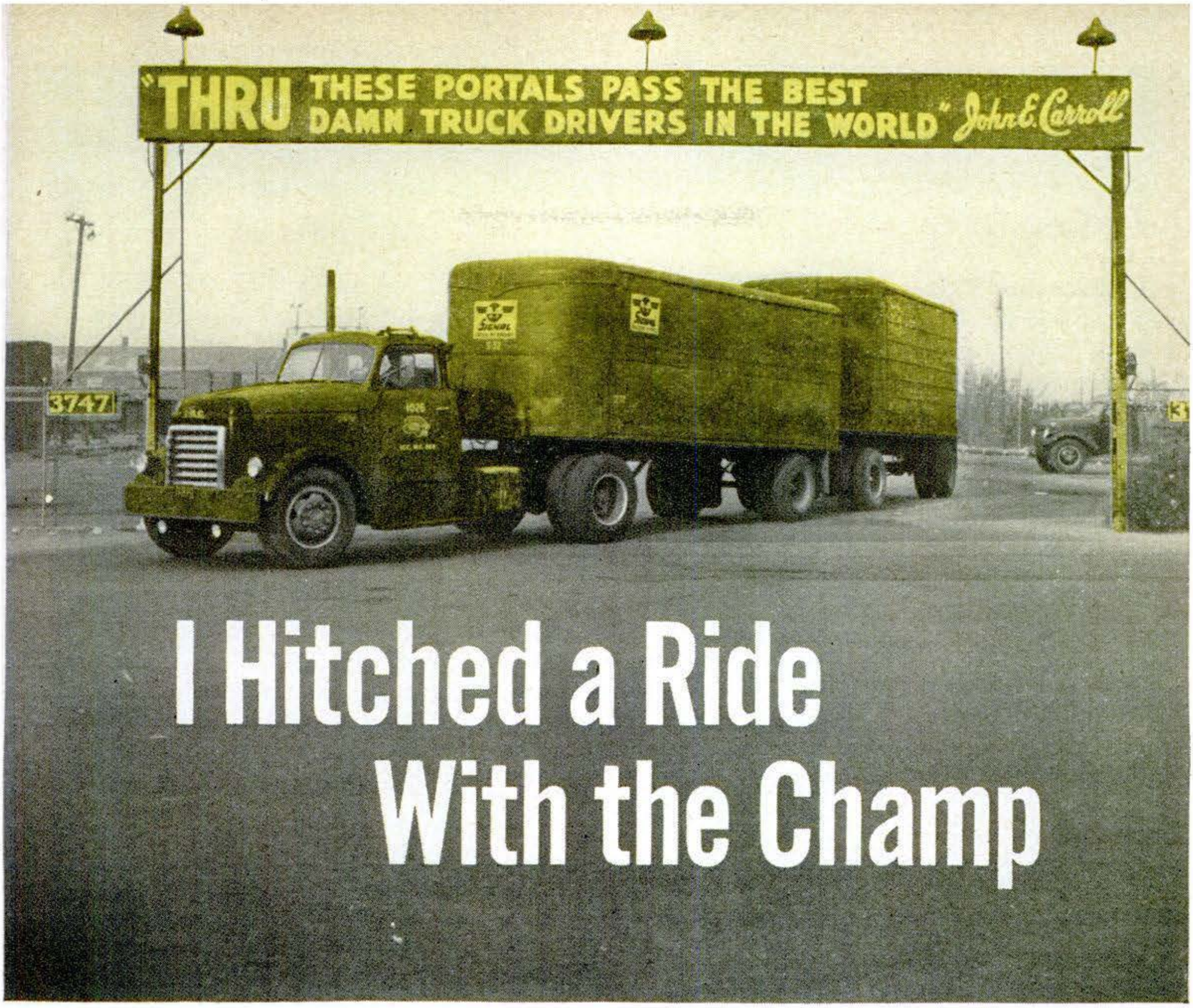


ASTRONOMERS have known for years that galaxies other than our Milky Way—they call them "extragalactic nebulae"—are sometimes close enough together to be linked by luminous filaments, like the bars of dumbbells. But recently, luminous bridges many thousand million million miles long have been photographed at Caltech's Palomar Observatory.

One of the largest yet discovered is shown here. Extending between three nebulae, some 50 million light-years from the earth, the upper and shorter part of the span, which is straight, is as clearly defined as a brightly lit boulevard. The lower section is less distinct and takes the form of an arch. Astronomers are not sure what formed these light bridges but one theory is that the three nebulae may be rotating around or passing one another, creating a disturbance which causes them to eject stars and other matter into the space around them.

They speculate, too, on the possibility that a similar bridge may link our Milky Way with the Large Magellanic Cloud, or Nubecula Major.

Copyrighted material



I Hitched a Ride With the Champ

A day's run with the "best" U.S. driver of the biggest trucks shows that a skilled hand at the wheel is also a cautious one.

By Andrew R. Boone

I CLIMBED into the cab of a gleaming red GMC 200-horsepower Diesel tractor early one morning recently for a fast run down the coast from Los Angeles to San Diego. Behind were hooked two full trailers loaded with refrigerators, washing machines and hardware for a store 120 miles away. At the wheel was 41-year-old, six-foot-two Harry Naylor, who has driven trucks 1,000,000 miles.

Naylor is a champion. Last October in New York, he won national top honors in the truck-full-trailer class at the annual Truck Roadeo, a grueling test of driving skill staged by the American Trucking Associations. Twenty-five years ago, at 16, he learned to drive a Model T pick-up. Now he drives anything that rolls, but especially the biggest truck-trailer combos the law allows. In California that means 60 feet in

Trophy won by Harry Naylor.

Copyrighted material

SCENES FROM A DAY'S WORK in a champion's life (facing page). Top: shifting gears; bottom left: "refueling"; center: uncoupling trailer; right: checking tires.

length and 78,000 pounds in weight.

On this morning I was hitching a ride with Naylor to find out what makes the champion of the big rigs tick.

It was 5:30 when he fired up the Diesel. A buzzer warned that air pressure for the brakes wasn't up.

"Better watch the tachometer, not the speedometer," Naylor advised me. "We'll drive at 1,950 r.p.m. That's the most efficient speed."

As the engine warmed up, Naylor went around and kicked each of the 16 trailer tires. All thumped alive—no flats. He's especially tire-conscious. Friction from a flat turning at high speed once set afire two tires and part of a trailer he was hauling. Another time a rim thrown by a blown-out tire caused trouble.

At 5:40 we moved out. As the outfit began to roll, Naylor started playing a tattoo with the gears. Two levers provide 15 forward speeds. One shifts five gears, the other moves between "under," "direct" and "overdrive." Keeping the proper ratio for speed and road conditions is a tricky business, and Naylor was to shift several hundred times by mid-afternoon.

Getting the rig under way seemed easy as I watched him hitting the clutch and moving the levers. In fourth direct we eased along city streets. He slowed to catch a green light in third overdrive. Through the gears he raced into fifth overdrive as we picked up 45 miles an hour on open highway.

Occasionally I glanced at the tach. It never showed more than 2,000 revolutions per minute, no matter whether Naylor dropped down two gears to take a hill or was descending a grade.

At 9:30 we swung into a lot in San Diego and dropped the end trailer. We delivered the first unit to a warehouse further on. Two freshly loaded trailers were waiting for us when we returned to the lot on the way home.

"I get a different run nearly every day," Naylor explained to me, between shifts. "Maybe to Santa Barbara, Bakersfield, the harbor or San Diego. Every morning the boss and some shipper entrust me with a $25,000 truck and a $50,000 load."

Naylor has had but one serious accident—a head-on collision during the war with another combo that suddenly pulled into his lane. Since then he has driven 350,000 miles without a mishap.

The Master Driver's Road Work Rules

- **Be courteous at all times. Never insist on having the right of way.**
- **Keep your mind on your driving. If you want to enjoy the scenery, park.**
- **Signal every turn, if only from one lane to another.**
- **Stay far enough behind the car ahead so that you can stop no matter what the other driver may do.**
- **Keep your car in good mechanical shape. Frequent checks can prevent accidents that could be serious.**
- **Consider every school child a potential stop sign—and stop if a youngster seems about to wander onto the road.**
- **Slow down at sundown. This is one of the most important rules. After dark, never over-drive your headlights.**
- **Stay within legal speed limits. Drive slower in traffic and bad weather.**
- **Always use good tires and keep them inflated properly.**
- **Stop at stop signs. Don't roll slowly through. You might not see a car speeding through the intersection.**
- **Never pass a car on a curve or a hill. You can't accelerate fast enough to duck trouble, and maybe the oncoming driver's brakes are faulty. If you don't kill him, he may get you.**

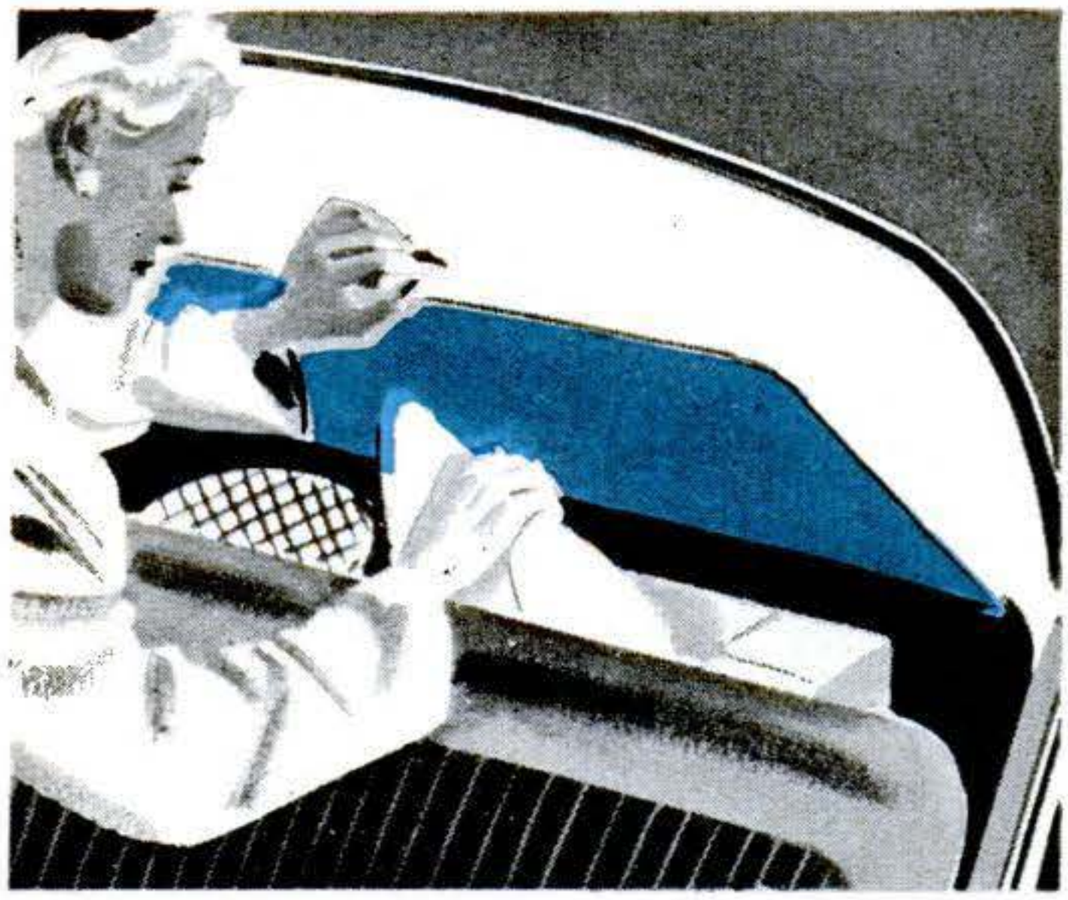
Copyrighted material

S-191

I'd Like to see them make...

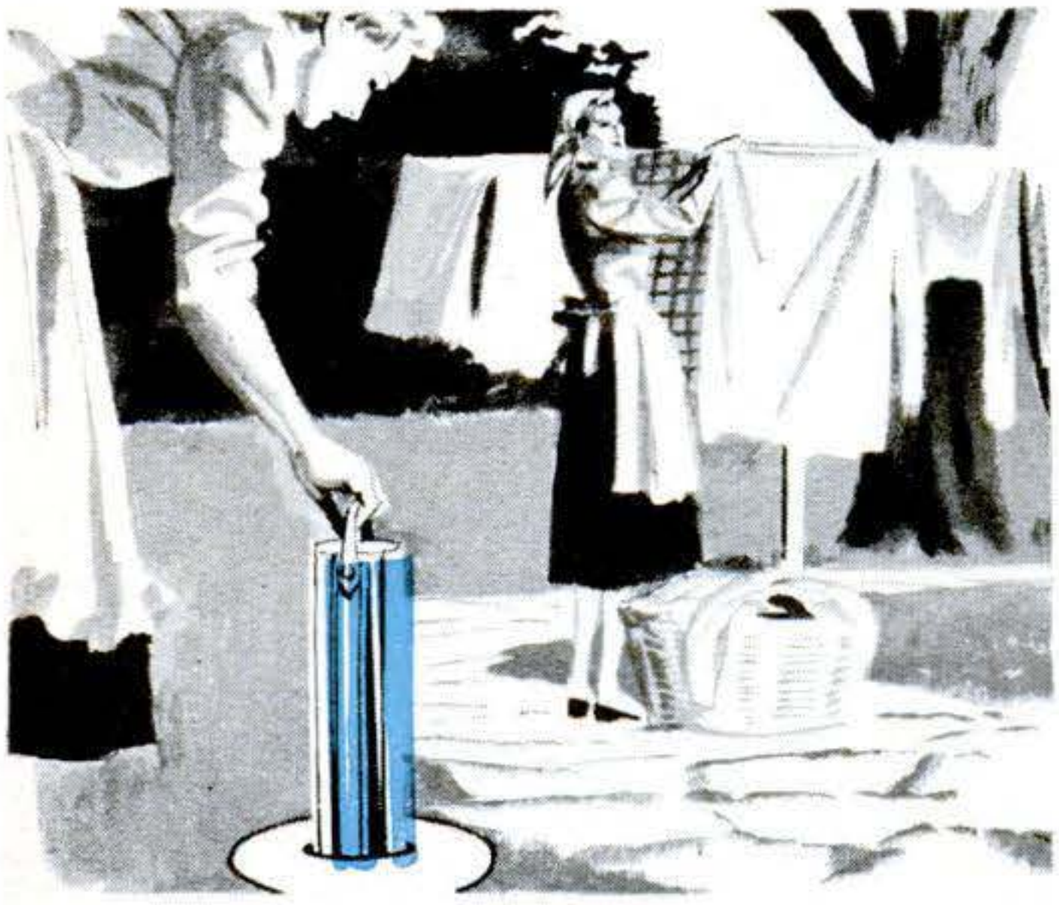
Everyone has his own pet idea of some gadget he would like to see in general use. What is YOURS? *Popular Science Monthly* will pay $5.00 for each one published. Use government postcards only. Contributions cannot be acknowledged or returned.

A CLEAR-PLASTIC RURAL MAILBOX. The postman could tell at a glance if there was mail to be picked up, and owner could see incoming mail.—*Mrs. H. Spence-Thomas, Brewster, N.Y.*



A STORAGE BIN to utilize the space under the shelf behind the back seat. This would relieve the crowding in the car's glove compartment. —*Joe Randolph, Greenville, Tex.*

A MUSIC STAND with a spindle at each end. The music, printed in rolls, would be mounted on the spindles and moved along by means of a foot pedal.—*Burton Unger, Brooklyn.*



A COLLAPSIBLE CLOTHESLINE POLE that would telescope into a container sunk into the ground, for out-of-the-way storage when not in use.—*David E. Mann Jr., Cheltenham, Pa.*

AN AUTO ALARM CLOCK to enable a drowsy driver to pull off the road and take a little snooze without fear of oversleeping and missing an appointment.—*A. V. Khan, Toledo.*

Copyrighted material

Giant Turbo Engines Power Navy Connie

FOUR 3,200-horsepower turbo-compound engines give this Super Constellation a top speed of 400 miles an hour. Cruising at 340, it can span the Atlantic in less than nine hours. Although the Navy has top priority, similar turbo-powered planes will soon go to nine civilian airlines. Some of the civilian jobs will have plush interiors like the muraled compartment, designed by Henry Dreyfuss, shown in mock-up at right.

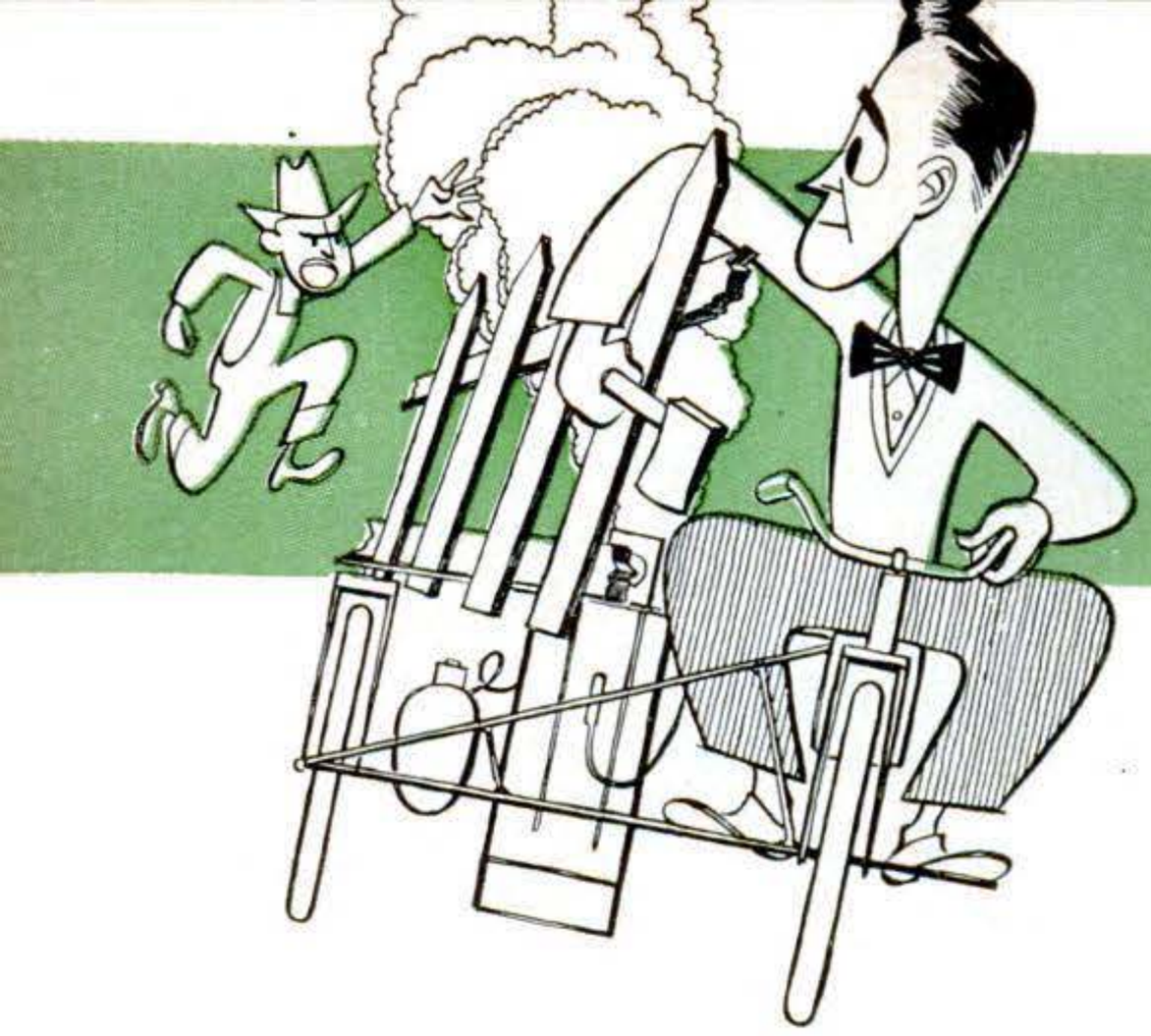
French Minijet Cruises at 225

DESIGNED for liaison jobs and primary flight training, the all-metal, two-place midget shown below is claimed to be the first plane of its kind to be powered by a jet engine. On its first test flight near Paris the Sipa 200 Minijet cruised at 225 miles an hour. It is 17 feet long, has a wingspread of 23 feet, and is equipped with retractable tricycle landing gear.

Turboprop for Small Planes, Too

THE world's first turboprop light plane is what Cessna calls its new version of the L-19 "Bird Dog," widely used in Korea. A 250-pound Boeing gas turbine has elbowed out the old six-cylinder piston engine, slicing 125 pounds off the plane's weight. It is quiet, vibration-free, and burns Diesel fuel. The arrow points out one of the turbine exhaust pipes.

Copyrighted material



His Bike Runs

It goes like a house afire

SMOKE gets in your eyes when you drive this three-wheel steam bike. But to make up for that, you don't buy a thing at gas stations. Free water, a hatchet and a well wooded countryside are all you need. You chop your fuel as you go, and if there are no trees around, a fence post will take you a few miles.

Anton Bohaboy of Rahway, N. J., well known as a builder of small steam boilers and engines, made the machine on a bet. When a friend stated that steam plants could not be applied to small vehicles, Bohaboy laid down his money and picked up his tools. He won the bet.

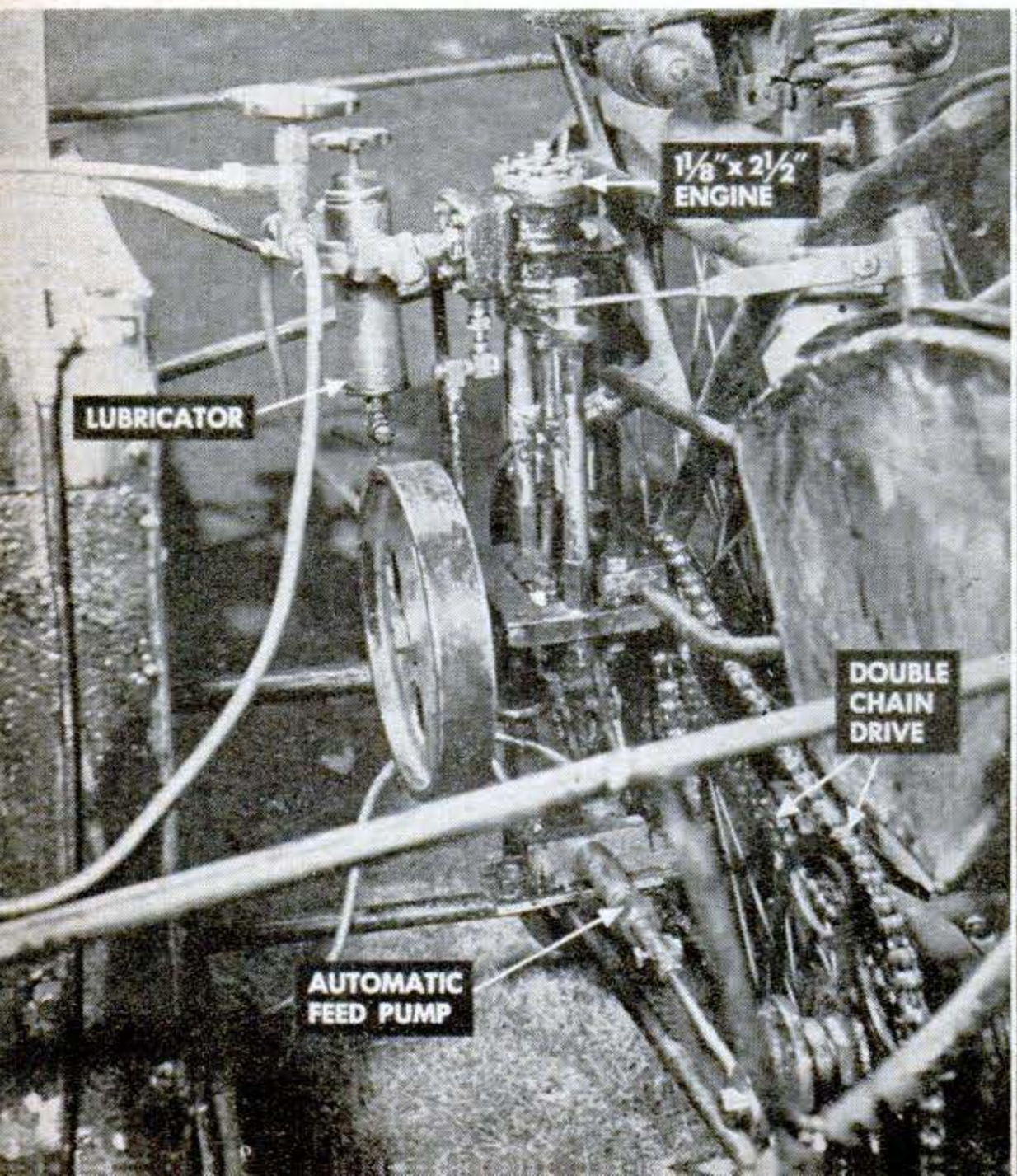
To provide room for the boiler and water tank (and incidentally to avoid sitting over a hot chimney), Bohaboy added a third wheel. The boiler, of his own design, supplies steam at 120 to 180 pounds' pressure. Timed by a POPULAR SCIENCE MONTHLY reporter, it got up 40 pounds of pressure from a cold start in five minutes—enough for the bike to be walked under its own power—and a head of 120 pounds in eight minutes from firing up. Firewood is carried in a box under the upper frame bar.

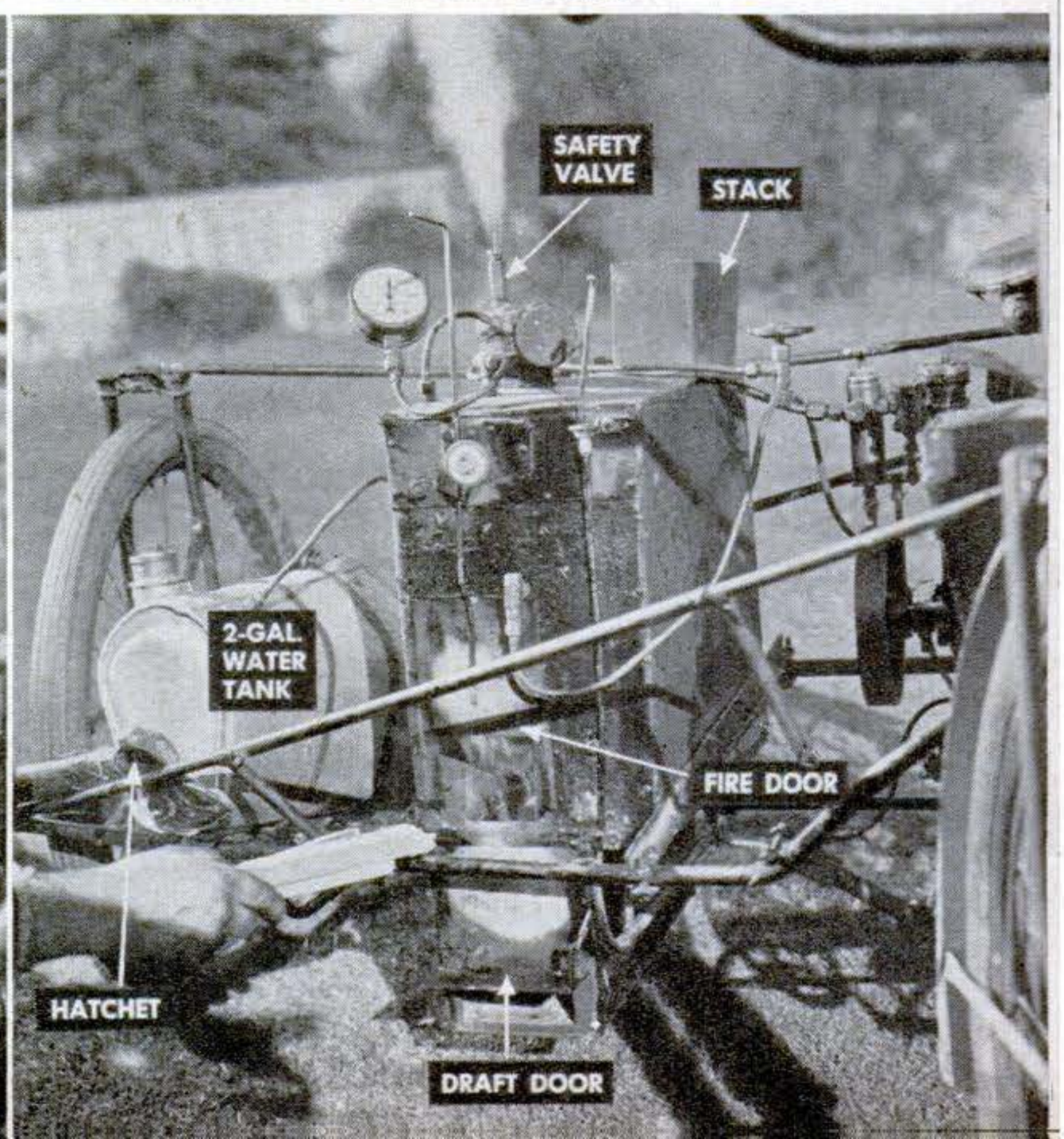
A chain from the one-cylinder engine drives what was originally the pedal shaft, and a second chain from this drives the rear wheel, the total reduction being one to 10.

Water is fed into the boiler while the bike runs by a pump driven off the jackshaft. A hand pump is provided for use when standing, or if the power pump should fail. To prevent flooding the boiler by the automatic pump, a manual bypass is provided.

ONE-CYLINDER POWER PLANT is a double-acting slide-valve engine of only 1⅛″ bore and 2½″ stroke, driving the rear wheels through a 1-to-10 reduction. A displacement lubricator in the steam line supplies oil to the cylinder. Power feed pump keeps up water level.

ALL-STEEL BOILER consists of a 3″ diameter steam drum with a dome at the top and a 1½″ mud drum at the bottom, connected by 70 tubes. Tested to 1,200 pounds' cold-water pressure, it's housed in boxlike casing. Draft door can be set from handlebars.





On Firewood

and he gets 18 miles on a bushel.

FLAMES SHOOT OUT of the stack and a plume of white exhaust steam trails behind as Anton Bohaboy guns his wood-burning bike. Its tiny engine gives it a top speed of about 20 m.p.h.

WATER GAUGE at rear of boiler is glass-tube type, protected by a shield of clear plastic. The rectangular hood on top of the boiler casing, facing backwards, is chimney stack.

Bridgelike Radio Telescope Probes Hawaiian Skies for Sources

WHERE does cosmic static come from? To find out, scientist Grote Reber has set up a framework of tubes and trusses at the summit of a 10,000-foot dormant volcano on the Hawaiian island of Maui. There he will use it to pick up the strange signals, not only directly from the sky but from the surface of the surrounding sea, which bounces

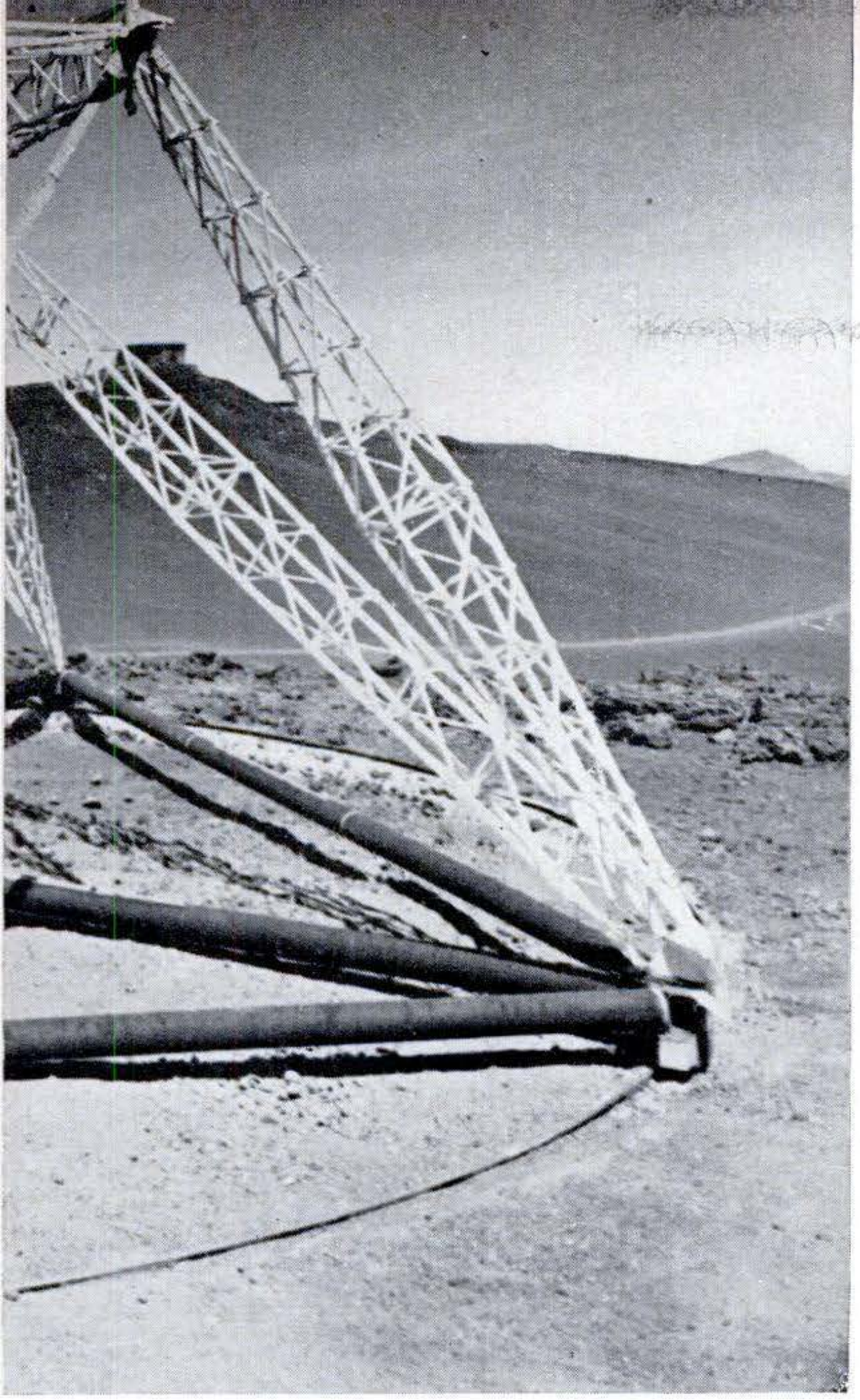
Highway 100

Have You Met These

SURE, YOU KNOW HIM by his twin horns. He's the bulldozing type who puts his head down, glares at one and all, and says: "Get lost, buster; I'm coming through."

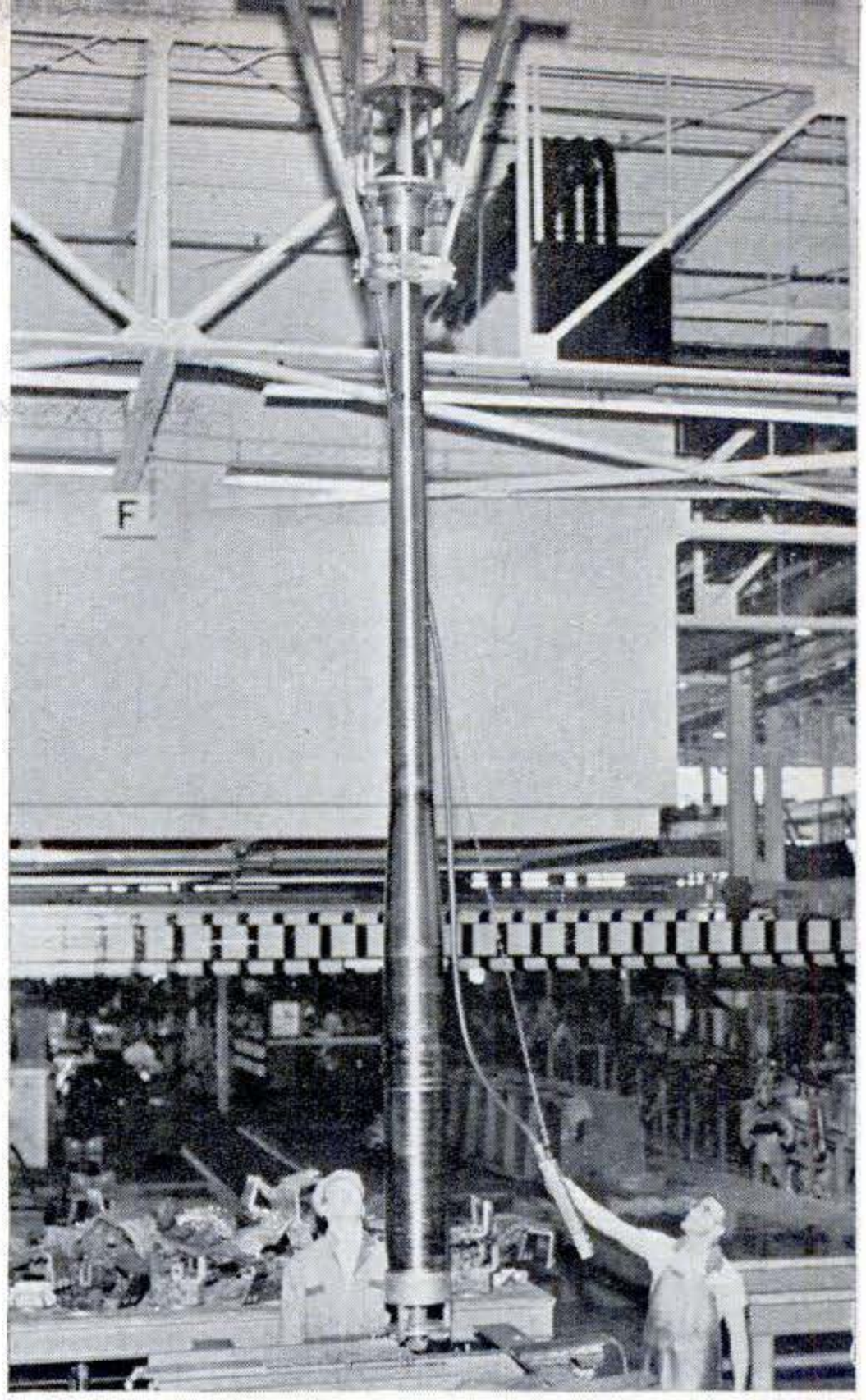
THE 70-MILE-AN-HOUR DEMON, that's now-you-see-him, now-you-don't Harvey, who passes you like you were standing still. You figure he'll be in Kokomo in half an hour, but 15 minutes later you pass his car pulled up—you've guessed it—where Harvey can take another quick one "for the road."

Copyrighted material



of Mysterious Cosmic Static

them back like a giant reflector. By timing and measuring the two sets of impulses, he hopes to localize their source and learn what forces create them.



Plated Gun Barrels Last Longer

You don't see the mirror-smooth plating on Uncle Sam's 90-mm. tank-gun barrels when they are hoisted out of this 30-foot-deep solution tank in the Oldsmobile Gun Plant at Lansing, Mich. It is all on the inside, applied by a specially fitted anode which accurately controls the uniformity of the electrolytic deposit. The gleaming metal lining resists wear better than an untreated surface, adding to the life of the rifling grooves.

Wild Animals at Large Lately?

THIS CHEST-THUMPING CHARACTER makes with a big fat sneer when you tell him it took you half an hour to get from here to there. "What held you up?" he yelps. "Backward or something? I made the same trip last week, stopped for lunch, and it took me only 13 minutes."

THEN THERE'S THE VICIOUS TYPE—the snarler who hates everybody on the road, and most of all, you. He fancies himself the world's one and only hep driver. National Safety Council's *Public Safety* magazine asks motorists to study this menagerie. Any chance of a throwback in your driving?

Copyrighted material

Their Small-Scale Trains Are Big-Scale Business

Model-railroad manufacturers turn out more equipment than the real railroad shops to keep 200,000 hobbyists happy.

By Robert Hertzberg

THE men who make the parts for the little trains that speed in tight circles over more than 38,000 scale miles of track in 200,000 homes are definitely in big business. They have found that the average scale-minded rail fan, who prefers to assemble his tiny trains himself instead of buying them ready-made, is willing to spend more than a week's salary a year on his midget transportation system. Their tiny trains, as a result, have become a million-dollar-a-year industry.

That's one to tell the little woman when she finds that you've spent the Venetian-blind money on a three-unit Diesel kit. She'll probably put a reverse twist on it: your hobby is making a fortune, all right—in somebody else's pocket.

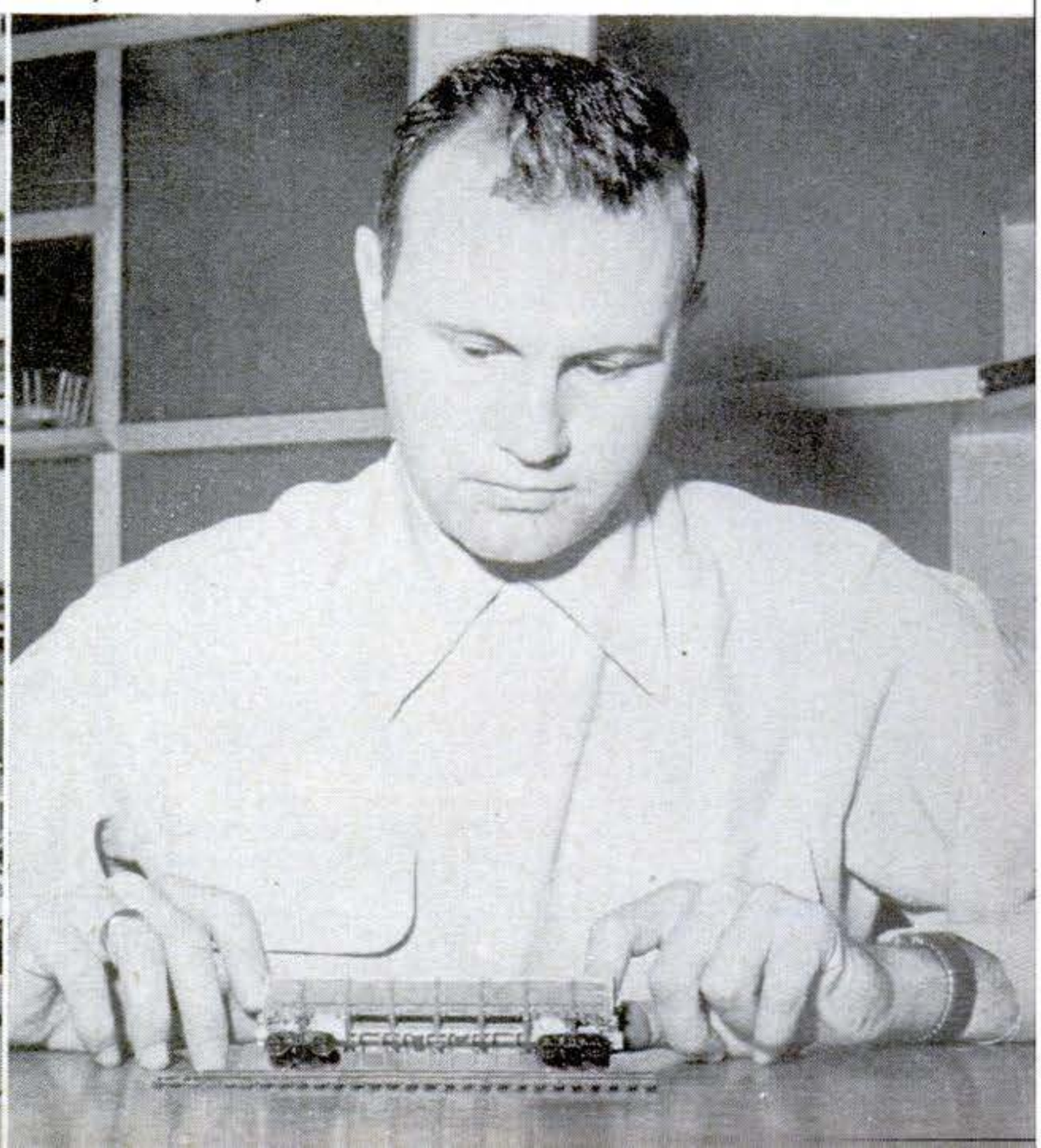
While that's true, it's also true that hobby-to-career stories are the rule rather than the exception. Nearly all of today's manufacturers rode into business on their own iron hobbyhorses.

One top-flight maker of table-top train equipment, Gordon Varney, recalls with nostalgia his introduction to model railroading as a hobby back in 1936.

"Where else," he asks, "could you get 10 hours' worth of entertainment for the two-dollar bill invested in a freight-car construction kit? The trouble was that

THE MODELER who made Milwaukee famous. William Walthers, whose assembly-kit business grossed $100,000 last year, believes that interest in steam-type models is dying out.

DESIGNING AIRPLANE BOMB BAYS didn't appeal to Californian C. J. Ulrich. So he put eight working dump doors in this little gondola car, sold 14,000 like it in three months.



after I had put a dozen of these kits together I looked at my wife and we said to each other: 'There should be a business here.'

"That was when a perfectly good hobby went out of the window. We soon found that there is no such thing as a hobby-business. To pay off, it has to be your business and the other fellow's hobby."

Models Outnumber Real Ones

Today the Varneys operate two trim, glass-walled plants, one in Coral Gables, Fla., and the other in Puerto Rico. They employ more than 50 full-time craftsmen, and together the two shops turn out more locomotives and cars than Baldwin and Pullman-Standard combined.

If Varney is the Baldwin among model-railroad builders, John N. Tyler of Woodbury Heights, N. J., is the American Locomotive Works. Tyler has ridden his hobby commercially for more than 20 years.

He didn't plan it that way. A marine and electrical engineer who had traveled all over the world in the Twenties, he finally went to work for an oil company

A CLERGYMAN with a reverence for fine workmanship. Albert Kurtz Sr. is shown here putting a grain-of-wheat lamp in an HO-gauge semaphore designed by his son.

BIG WHEEL of Mantua Metal Products Co., which does a million-dollar business in little engines and cars, is John N. Tyler. His locomotives range in price from less than $10 for the side-tank switcher in the foreground to $50 for a big road hog. High-speed injection machines, punch presses and screw machines turn out low-cost, quantity-produced items that are actually better than handmade models.

Copyrighted material

in a small south Jersey town. O gauge was just getting well under way then, and with a native-born Englishman's love of model railways, Tyler went for the hobby in a big way. To finance his elaborate layout, he spent evenings and week ends making electrically driven models of boats for yachtsmen who cruised the nearby Delaware River.

Tiny Trains Need Tiny Motors

In 1932, an overseas friend showed Tyler a new kind of locomotive model. It was so small that it hardly spanned the fingers of his hand. He was told that English fans were going crazy over these half-size, HO-gauge jobs because a whole layout could be put on a bridge table. The only trouble was that nobody had been able to design a motor small enough to fit in such a model and at the same time strong enough to haul a heavy train.

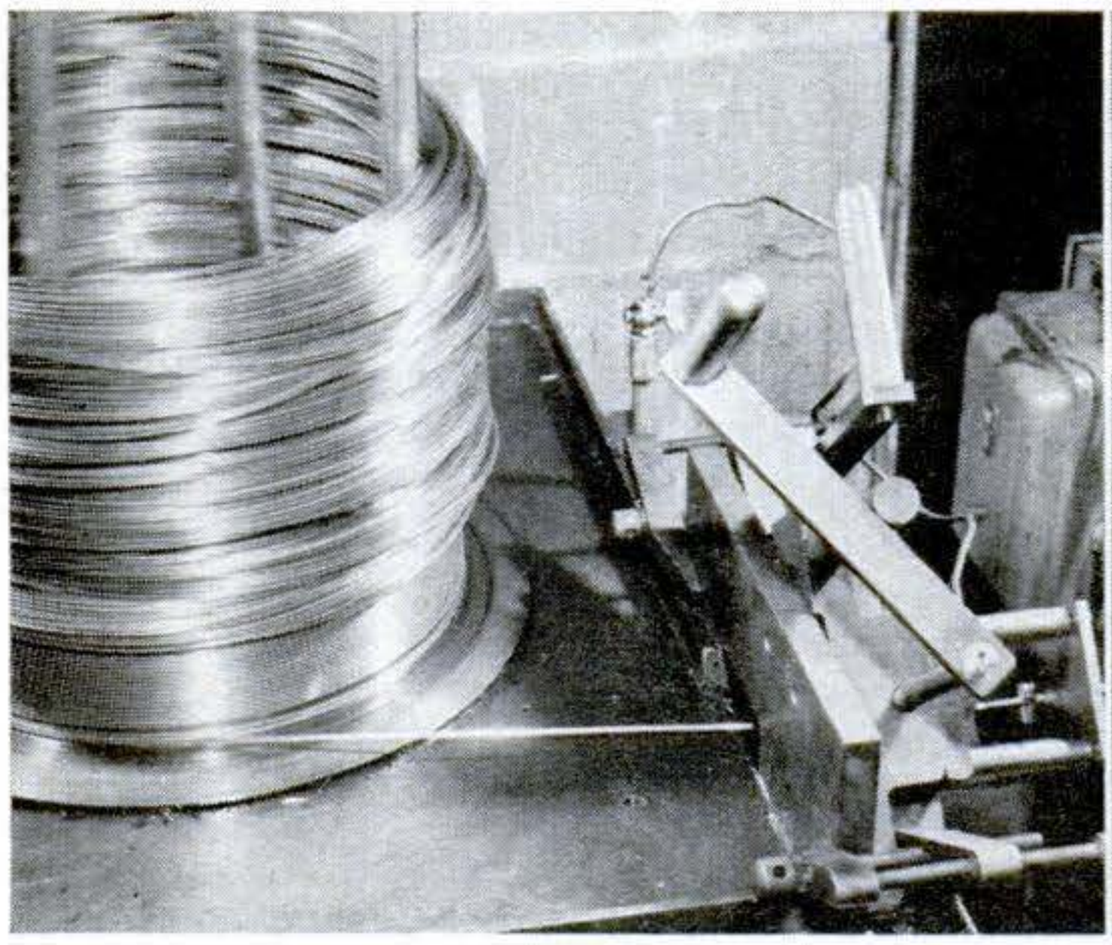
Tyler saw his opportunity. He came up with a rugged little power plant, not much larger than a sewing thimble. Before he knew what was happening, he was out of his back-yard workshop and deep in the full-scale business of manufacturing small-scale railroads. He is generally credited with being the first to produce American HO-gauge equipment on a commercial scale. His firm, Mantua Metal Products Co., is now one of the largest in the field, and turns out a complete line of locomotives and cars in easy-to-assemble kit form.

In his modern factory, staffed by 50 employees, Tyler does all his own fabricating. He buys only screws and basic raw materials, performing all forming, machining, casting, molding and finishing operations himself to insure precise control of the finished product.

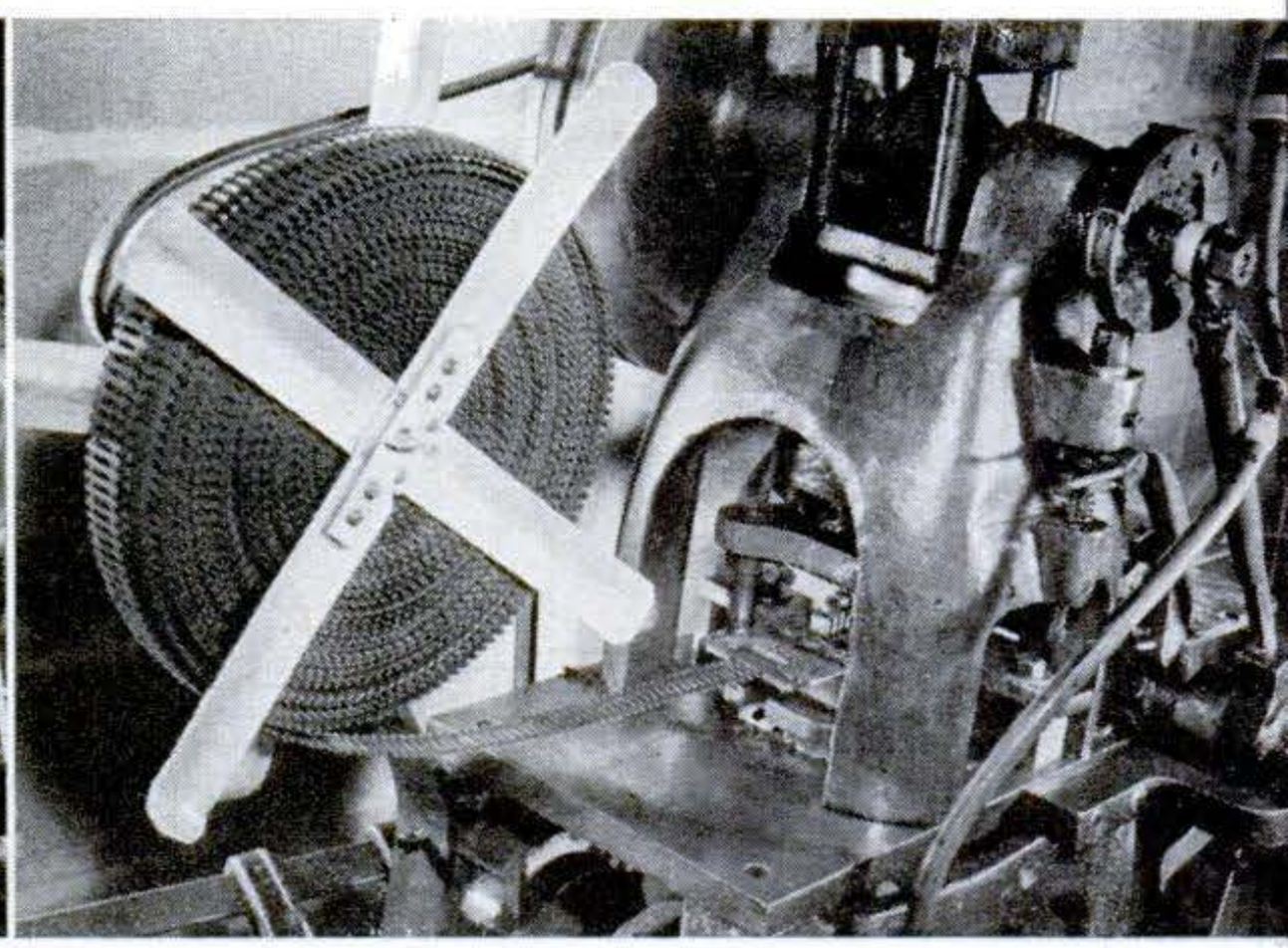
On the other side of the country, Rollin Lobaugh had nearly forgotten the cigar-box car models he built as a boy when his wife gave him 100 feet of steel rail and a built-up O-gauge switch for Christmas, 1930. Lobaugh was already in the manufacturing business, and the cost of custom-built engines for that gauge set him to thinking. Quantity-production methods could bring this hobby into a lot more homes.

Builds Mostly Locomotives

Lobaugh concentrated on locomotives, pioneering such features as individually sprung bearings, the enclosed gearbox, lost-wax castings, and the type of two-rail pickup which uses the engine for one contact and the tender for the other. Two months ago he moved his prospering business into a brand-new plant, where he and his 45 employees will soon commemorate the event by launching a new model—a Chesapeake & Ohio 4-8-4.

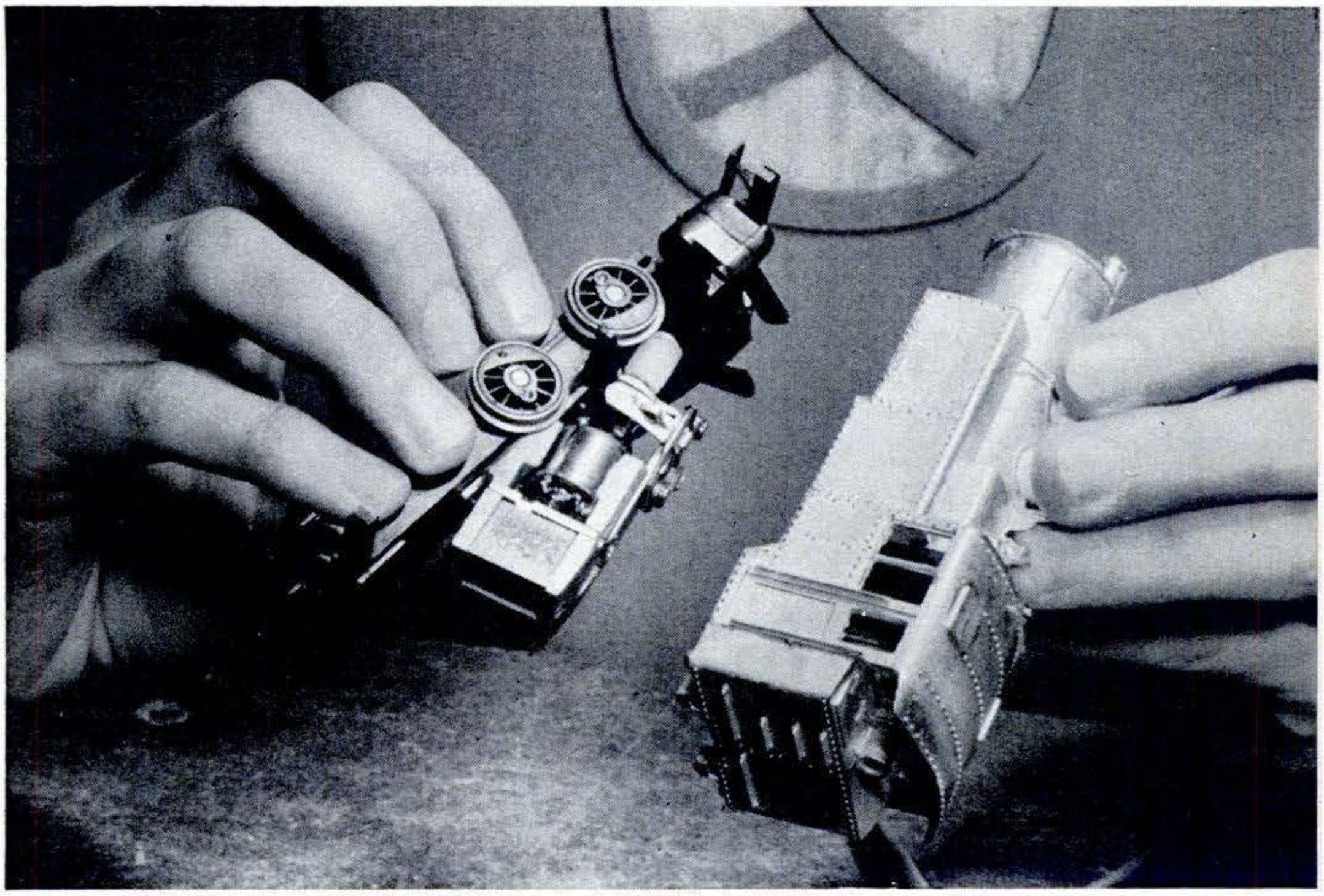


TO MAKE A MILLION FEET of track a year, Atlas Tool Co. shapes round brass wire into T-shaped rail by passing it through rollers.



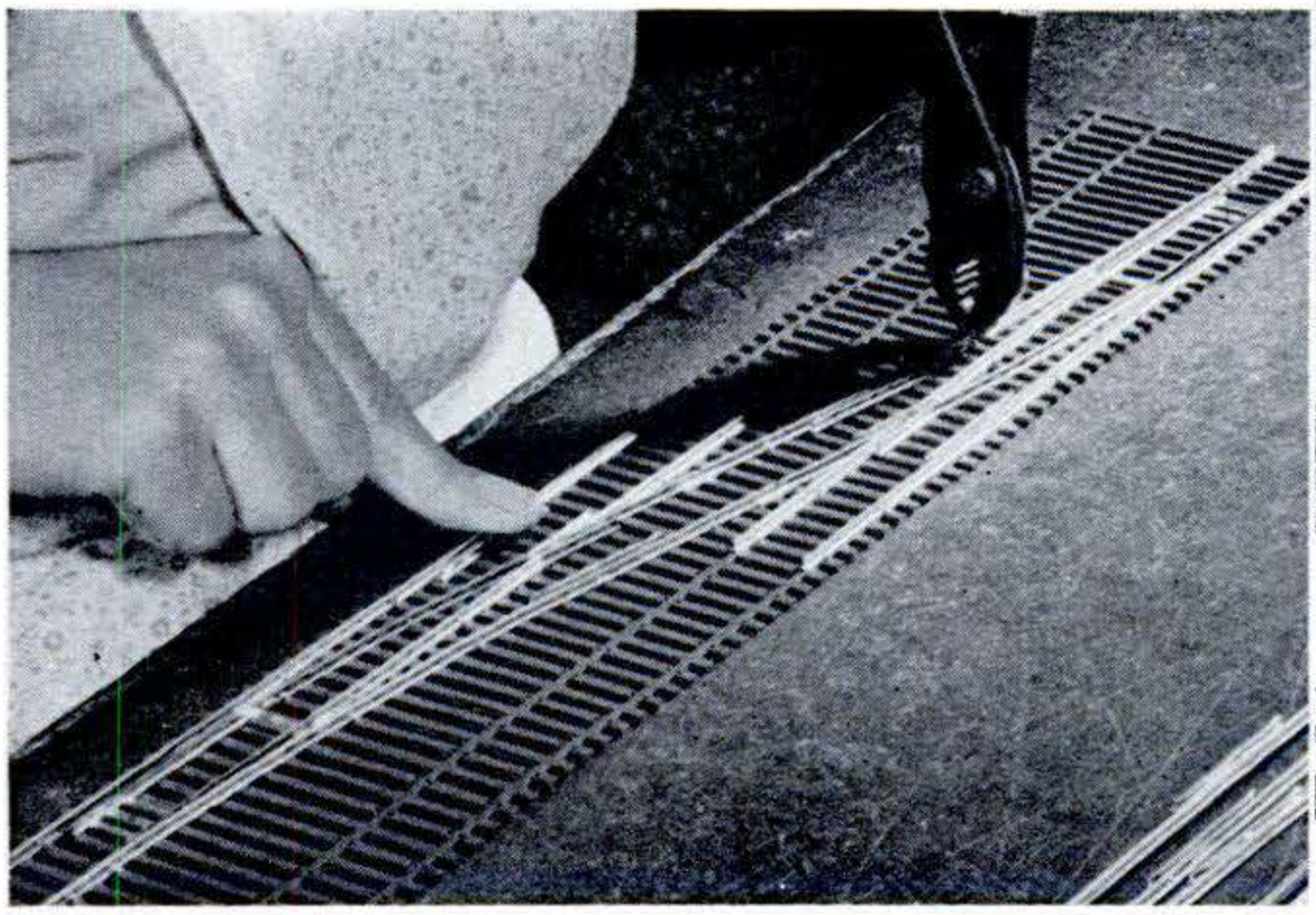
ROLL OF VULCANIZED RUBBER provides the ties. In this high-speed press, rubber is stamped to form a continuous strip of ties.

Copyrighted material



BOOSTER SWITCHER packs a modernized version of the motor which put Tyler in model-train business. Production of this locomotive model alone exceeded 20,000 units in 1952.

Out in Milwaukee, a stocky youngster, aged six, never dreamed that the train he received for Christmas, 1900, would someday turn his own life into a madhouse of activity. But during the great depression, the office firm with which William K. Walthers was connected went bankrupt. That gave Walthers



TWO SWITCHES are connected for a crossover. Tiny spikes are pressed into properly spaced and prepunched holes.

ROADMASTER STEPHAN SHAFFAN with some of switches which the Atlas Tool Co. sells at the rate of 250,000 a year.

Copyrighted material

time to write a book. He had constructed a $3,000 standard-gauge railroad by then, so the subject was obvious.

Other model-railroad fans read it, and they wanted to build the items Walthers described. To oblige them, he scrounged around for suitable parts, and the fans were glad to buy this stuff. At first, he specialized in signal and control equipment. But he quickly found a market for locomotives, cars and track. In 1932 he went into business, officially, as William K. Walthers, Inc. He had virtually no capital but a lot of know-how. Today his catalogue lists more than 3,000 items.

Gauges Get Smaller

A similar willingness to help other model railroaders was instrumental in getting Sherman E. Dance of West Englewood, N. J., into a profitable business. A printer-artist-teacher by profession, Dance applied his talents to the painting and lettering of his own model trains. Friends who saw and admired his work asked him to noodle up their own cars. He did. He then designed a series of freight cars in a new, and even smaller gauge than HO.

Dance delivered his first TT kits in 1951, and they were a hit from the start. Working alone in the basement of his house, he has built up a fine little business, with 25 dealers scattered all over the United States. He now produces 66 different items under the trade name Gandy Dancer.

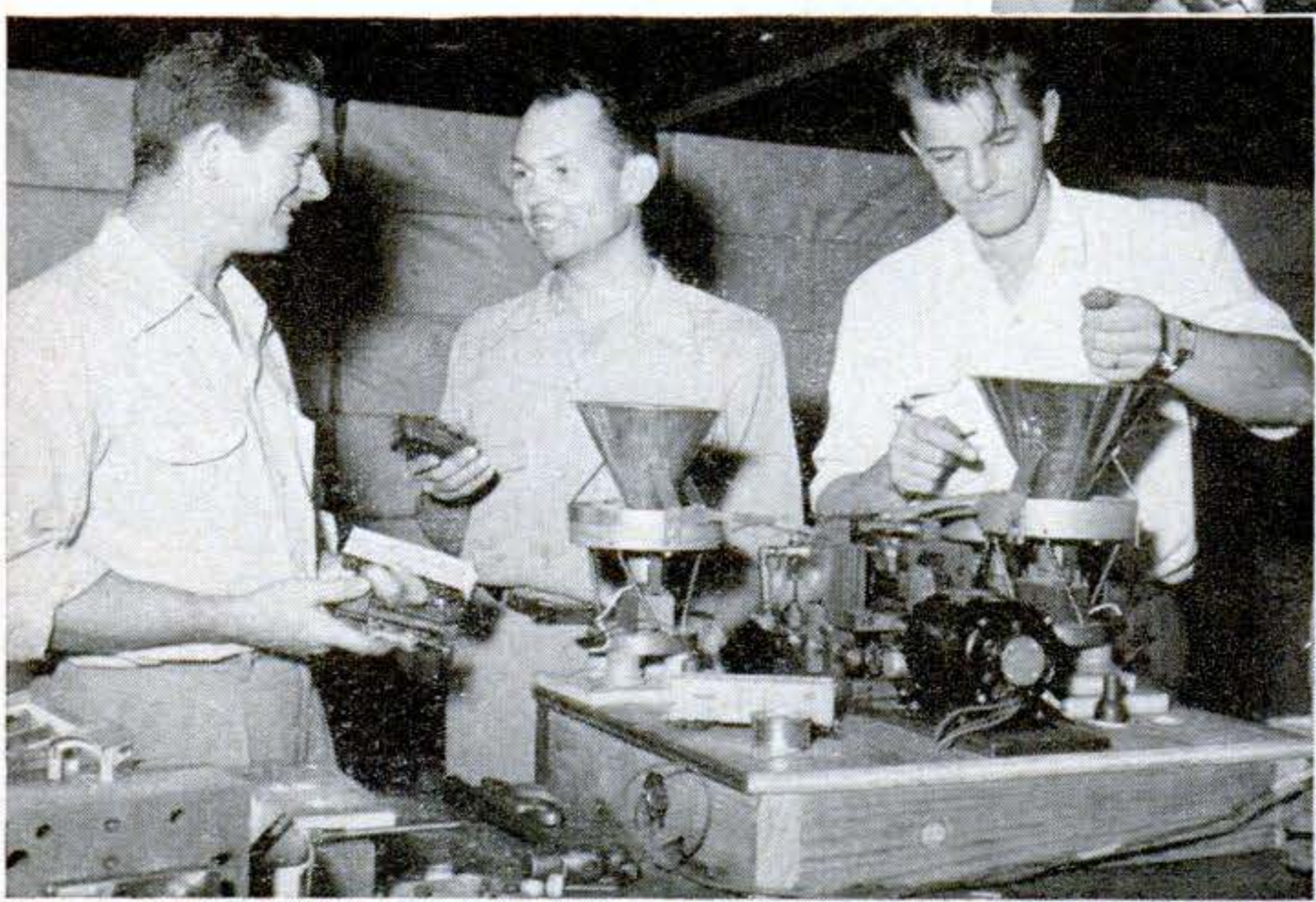
Mechanical rather than artistic ability led C. J. Ulrich of North Hollywood, Calif., into the manufacturing line. Eleven years ago, when he was designing bomb bays for North American Aviation, a fellow engineer brought in a 35-cent paper model of a freight car. Ulrich assembled it, rolled it across his desk—and he was hooked.

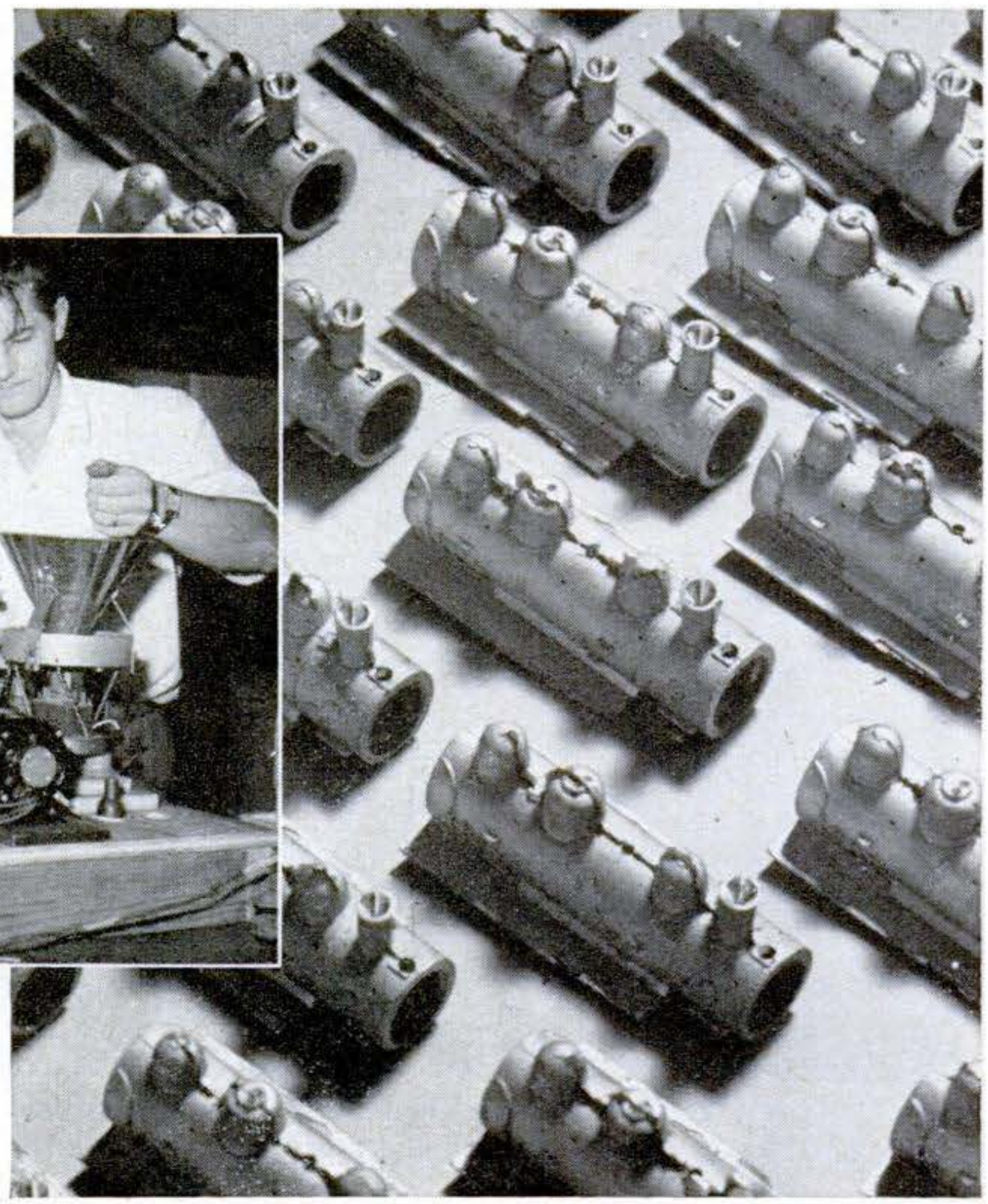
But model railroaders are critical, and an engineer like Ulrich soon found fault with the best commercial equipment.

"Why hasn't someone designed a simplified gondola car that works like the real ones?" he asked himself. "Or a three-color signal, or a track cleaner?"

In 1946 he started turning out three-color signals in his garage workshop. The item caught the fancy of other model

[Continued on page 246]



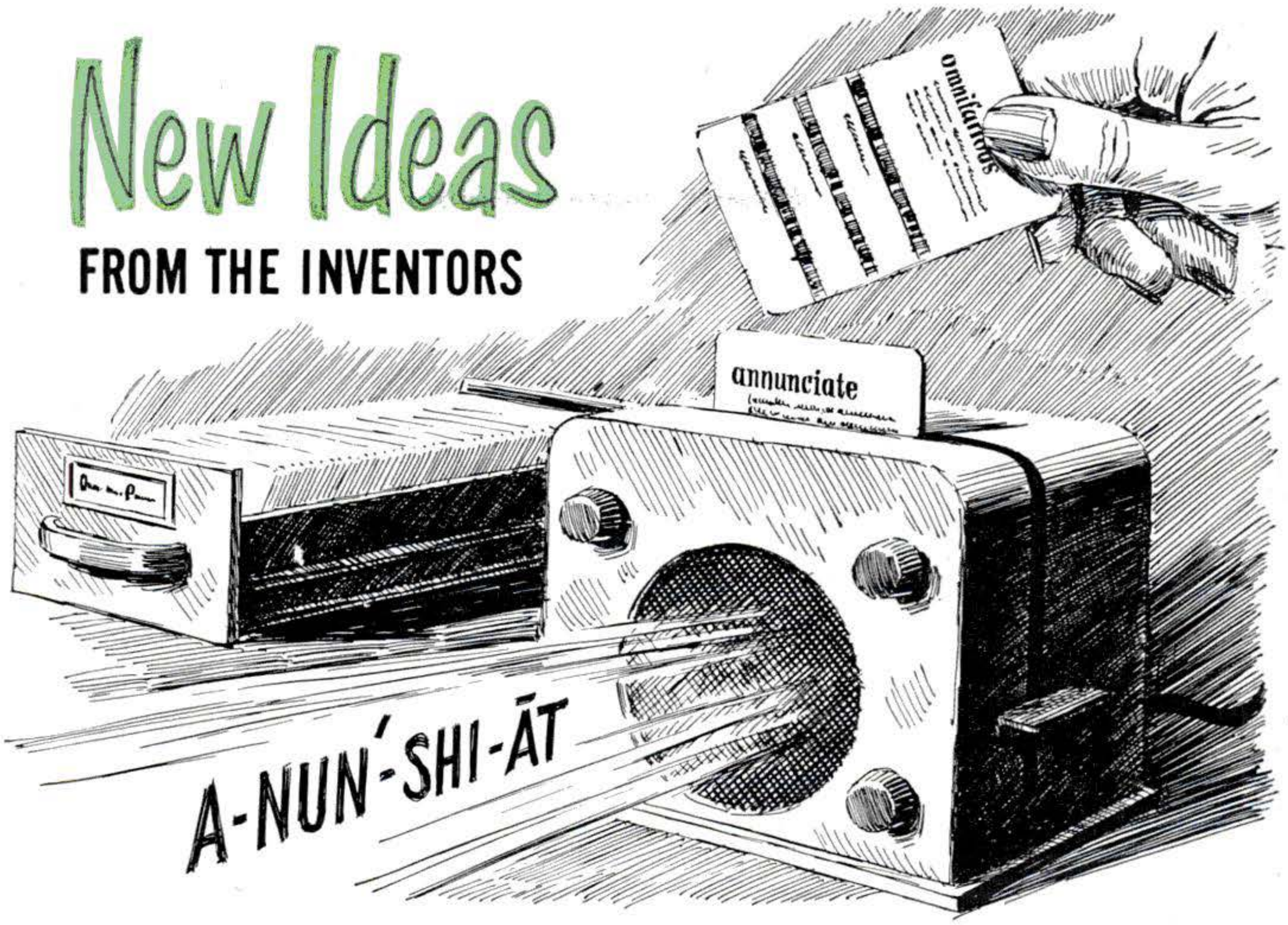


THREE MEN AND A HOBBYHORSE. Charles Menteer, Weldon Purcell and Charles Voelckel specialize in model-railroad castings. In photo above, Voelckel tries out a new machine which assembles wheels and axles. Boilers at right are ready for trimming.

Copyrighted material

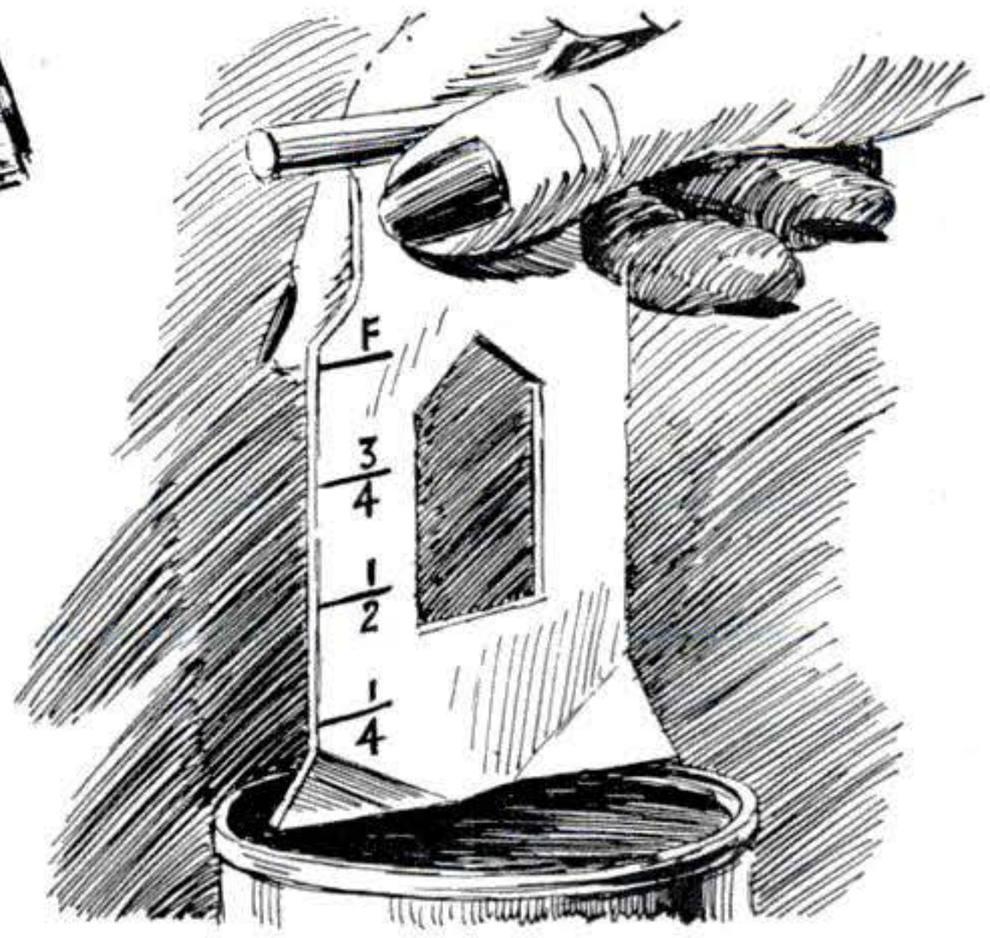
New Ideas

FROM THE INVENTORS



1 Dictionary to Talk Out Loud. To tell how to pronounce words, this talking dictionary would speak them. Its vocabulary consists of cards bearing magnetic sound tracks, like those of tape recorders, besides printed text. When a user selected the card for the desired word and placed it in an electrical unit, the card would move past a sound pickup head, and a loudspeaker would pronounce the word correctly.

2 Trigger to Be in Gun Handle. You could use pistol or rifle equipped with this arctic-style auxiliary trigger without removing gloves or even mittens. With the safety catch released, squeezing the handgrip would actuate a pivoted plate forming an extension of the regular trigger, and would fire the weapon.



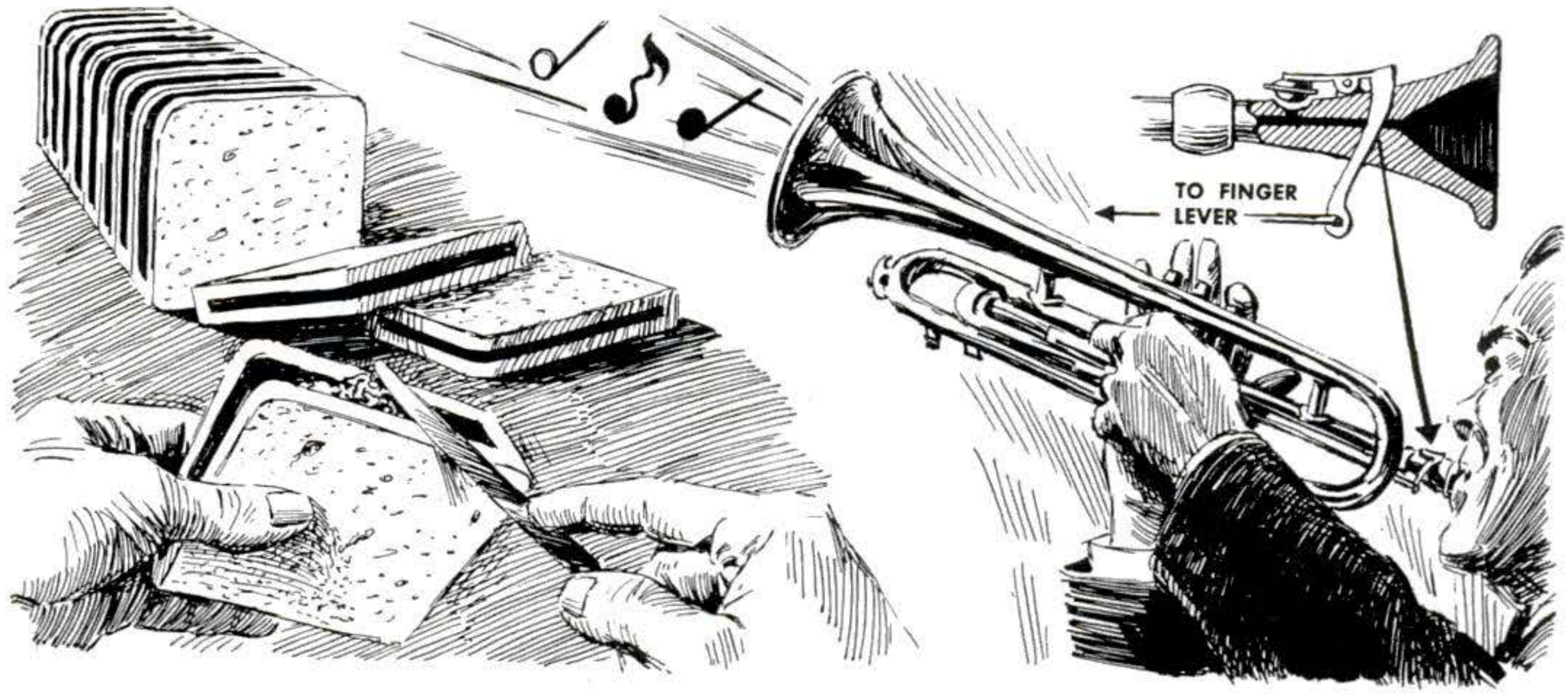
3 Scoop to Get What's in Can. This "disher-outer" would make it easier to remove dog food and other sticky semisolid foods from cans. When inserted in a can and twisted, its oppositely inclined lips would lift out the contents. The graduations marked on the scoop would aid in serving exactly the amount of food needed.

Please turn the page for more new ideas.

Copyrighted material

MORE New Ideas from the Inventors

4 Signal to Prevent Collisions. This device would spot an oncoming car that couldn't be seen around a corner or over a hill. High-frequency waves from the other car's ignition system, picked up by an antenna, would flash a warning light (inset). With its directional antenna slanted to right, the device would detect cars nearing blind corners in city streets. It would work whether or not the other car has it, too.



5 Hollow Slices to Make Sandwiches. A loaf of bread of this style could be made into sandwiches in a jiffy. Each of its pre-sliced sections would be as thick as a complete sandwich, and would have its center hollowed out and open on two sides, so you could insert filling as above.

6 Extra Valve to Send Hepcats. If brass wind instruments had this special valve, beginners could give out with "gliss" tones, or slur notes, to the delight of jazz connoisseurs. To obtain this effect with a standard instrument a musician must be skilled in "half-valving" or "lipping."

Patents on these inventions have been granted to: 1. Chester M. MacChesney and Ella B. Wenger, Chicago; 2. Clarence E. Simpson, Springfield, Mass.; 3. George P. Wakefield, Vermilion, Ohio; 4. Carl H. Holm, Honolulu; 5. Ambrose Ryder, Yonkers, N. Y.; 6. Anton Solarz, Minneapolis.

Copyrighted material

WILBUR SHAW REPORTS FROM THE DRIVER'S SEAT:

Buick Hooks New V-8 to Dynaflow+Gears

The result is a red-hot drive that gives you gear-fast getaway plus smooth torque-converter cruising in a single transmission.

I WOULD never have believed it if I hadn't seen it.

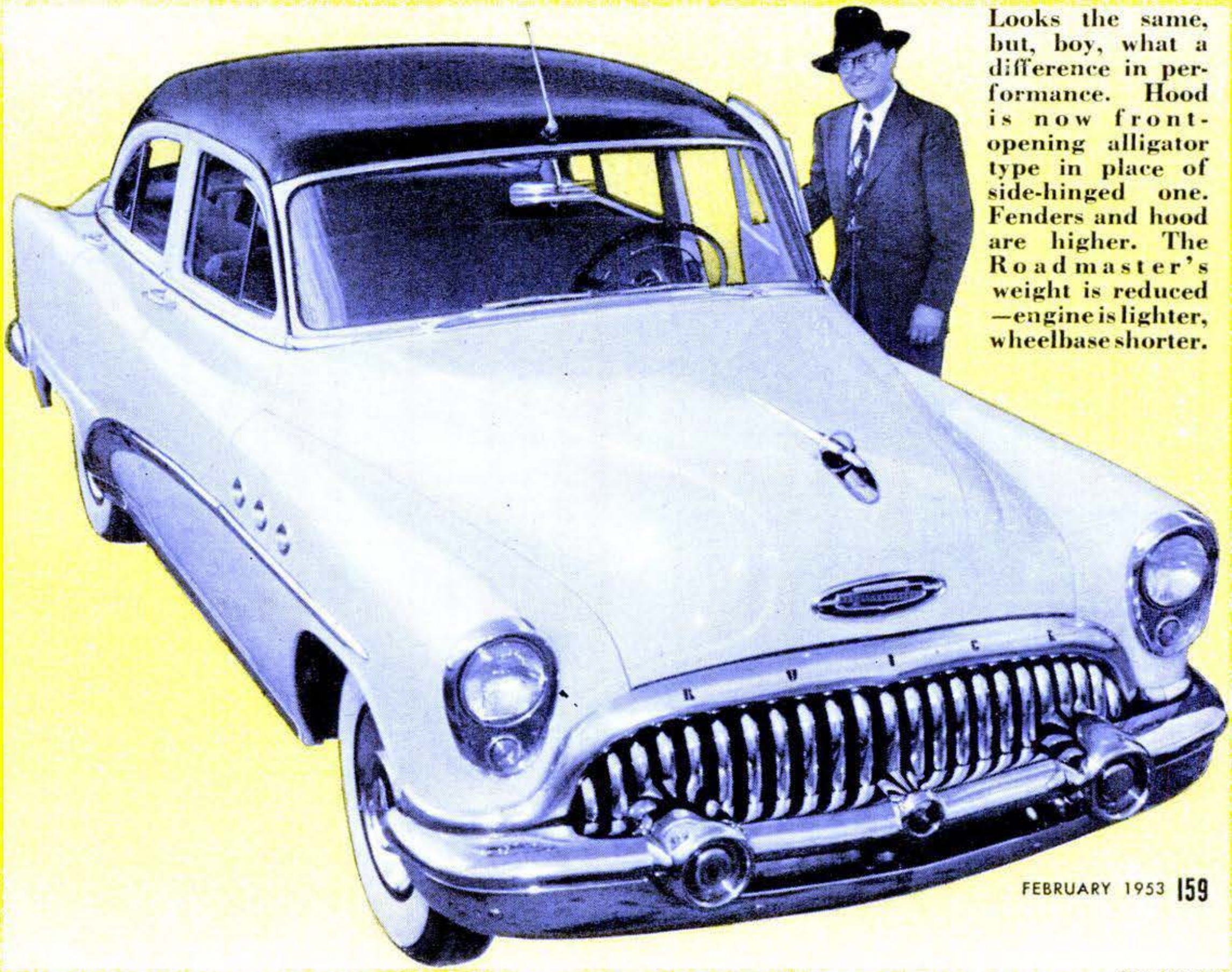
I was doing 60 miles an hour from a standing start in 14 seconds in a Buick Roadmaster—with a torque-converter transmission. Last year's Buick took 19 seconds to reach 60. But now I was behind the wheel of a 1953 job.

I reached 80 miles an hour in 21.6 seconds, compared with 28.4 seconds for last year.

On the lower end of the acceleration range I was at 30 miles an hour in 5.6 seconds compared with 7.4 in 1952.

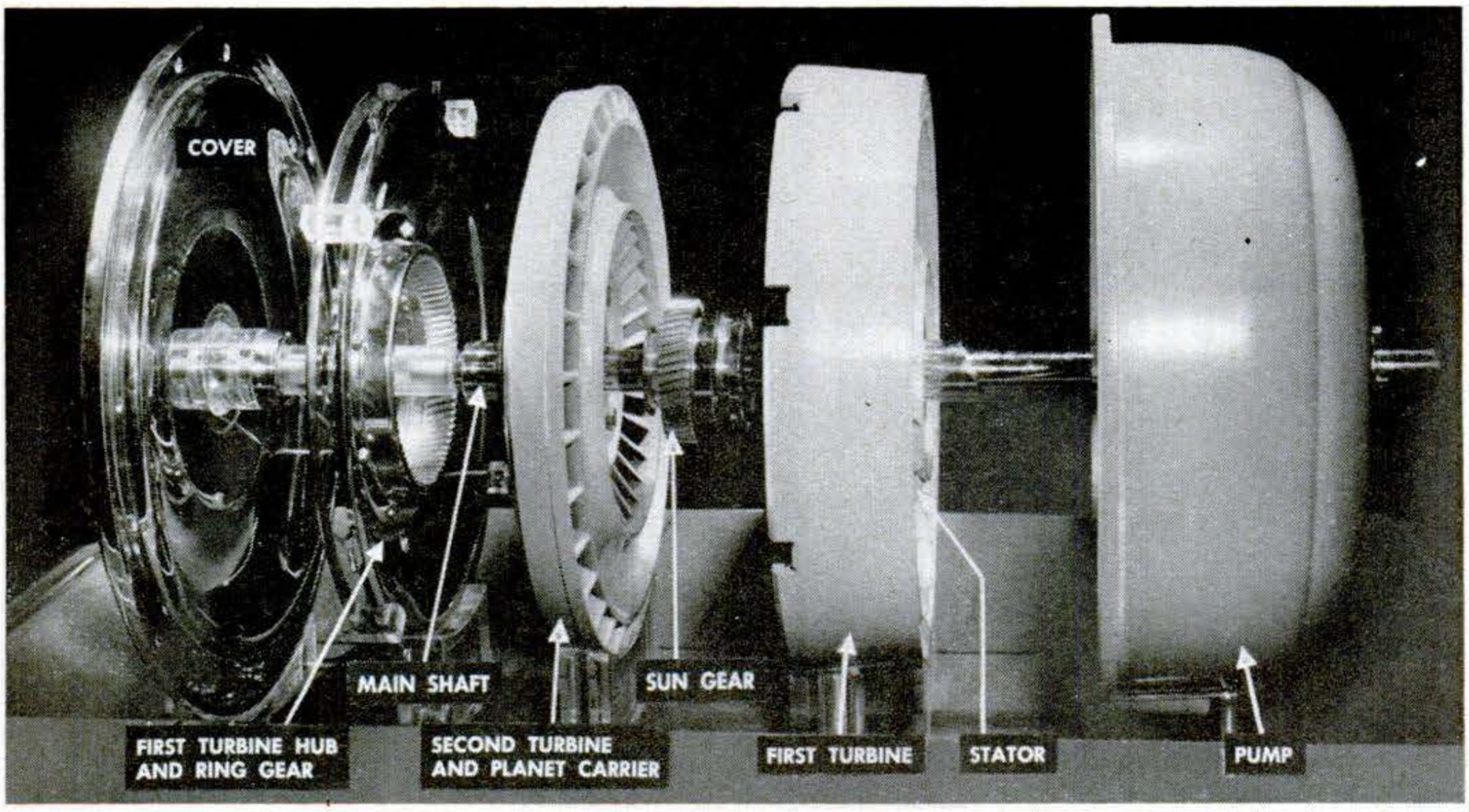
The speedometer was calibrated and all speeds were true. But behind that acceleration is a whole catalogue of improvements, including a spanking-new V-8 engine and an automatic transmission the like of which has never been seen before.

The Buick used to lag when the light



Looks the same, but, boy, what a difference in performance. Hood is now front-opening alligator type in place of side-hinged one. Fenders and hood are higher. The Roadmaster's weight is reduced—engine is lighter, wheelbase shorter.

Copyrighted material



Extra turbine and planetary gears provide fast getaway in new Dynaflow. In starting, pump directs oil at turbines. As oil rebounds from blades, it strikes stator, which can turn only one way, and holds it stationary. This locks sun gear, fixed to stator. First turbine, bearing ring gear, thus cannot turn sun and must drive torque-multiplying planetary gears connected to output shaft. As car reaches cruising speed, oil rebound lessens, allowing sun and stator to turn. First turbine and sun then free-wheel, and cruising power comes from second turbine, locked to output shaft and driven by oil acting as simple fluid coupling. Another gear set (not shown) provides emergency low and reverse.

turned green. With the accelerator on the floorboard, the engine wound up and a high fuel consumption was the inevitable consequence. That kind of a performance was a disservice to one of the grand old names in American automotive history.

Buick introduced what it called Dynaflow, a torque-converter type of transmission, to the U. S. passenger-car field in 1948. For four years Buick clung to the torque converter without gears in the Drive Range to boost the engine's push at the rear wheels from a standing start. Meantime, several other companies out-distanced it.

But now a spectacular improvement has been made. The new transmission reacts to the accelerator foot exactly like the old one—you get no thump of gear-changing. The whole operation is as smooth as silk. But the performance is different.

To understand what Buick has done

FACTS ON '53 BUICK

Model: Roadmaster 4-door sedan.

Engine: valve-in-head V-8; 188 hp. at 4,000 r.p.m.; compression ratio, 8.5:1; piston displacement, 322 cu. in.; piston travel (in feet per car mile at 20 m.p.h.) 1,396; bore and stroke, 4.0" by 3.2"; crankshaft bearing surface, 16.83 sq. in.; torque, 300 lb.-ft. at 2,400 r.p.m.

Weight: 4,089 lb.; per hp., 21.75 lb.

Transmission: Twin Turbine Torque Converter, rear-axle ratio, 3.6:1.

Steering ratio: 21.3:1, radius of turning circle, 20.7'.

Effective brake-lining area: 219 sq. in.

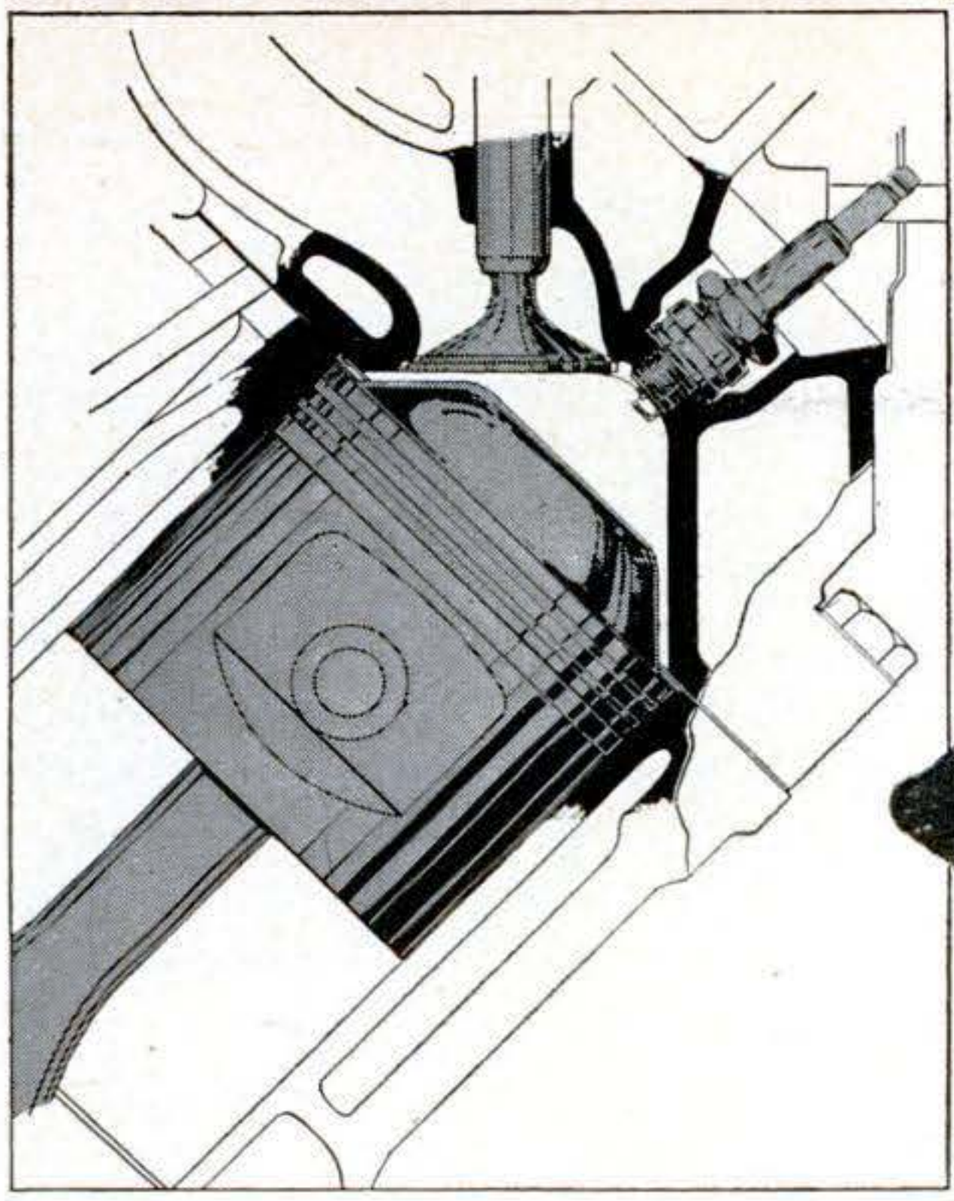
Springs: coil front and rear.

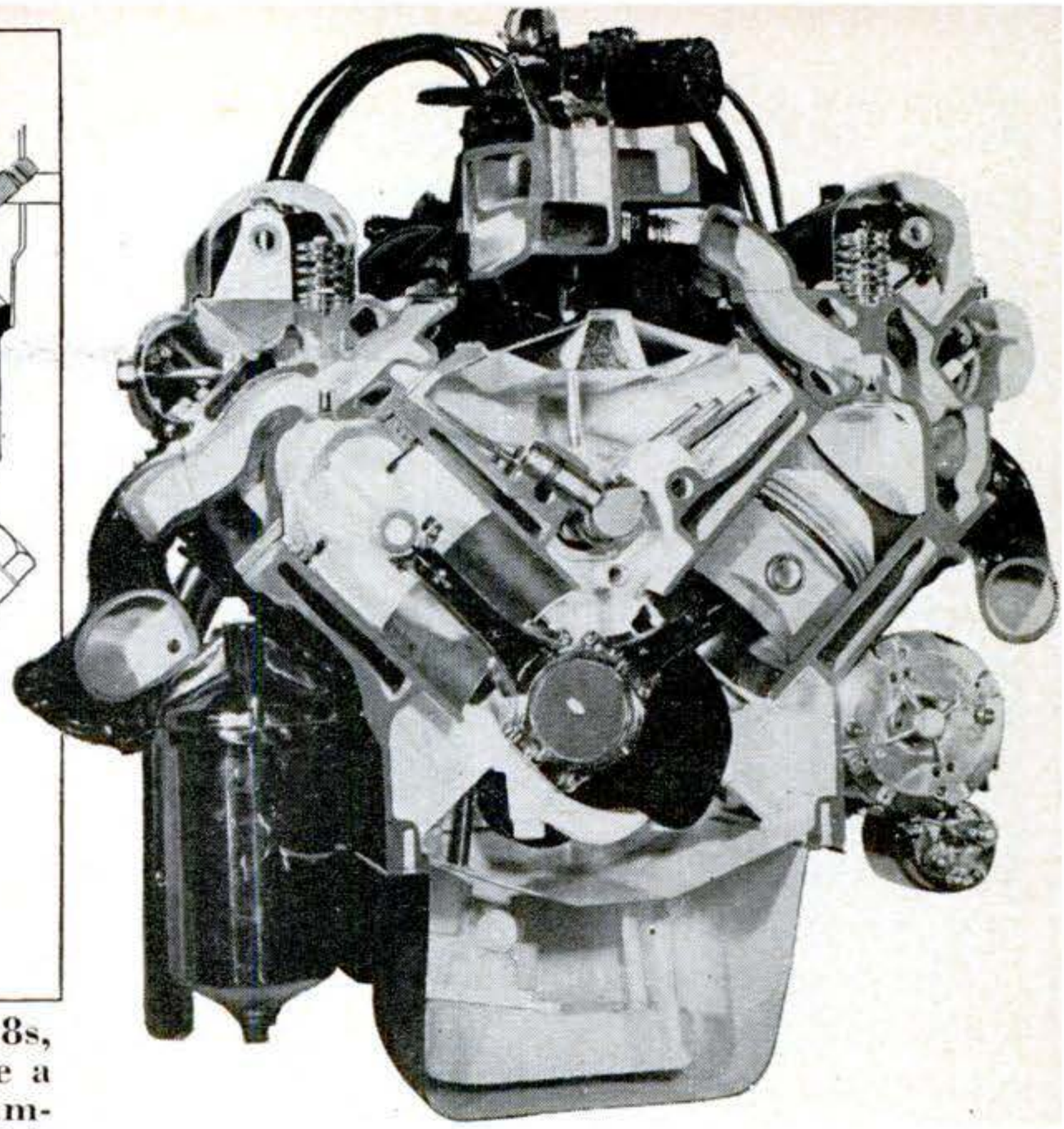
Outside dimensions: height, 63"; over-all length with bumpers and guards, 211.6"; width, 79.9"; wheelbase, 125.5"; overhang, front 34.6", rear 51.5"; tread, front 60", rear 62.2".

Inside dimensions: seat-cushion width, front 64.1", rear 64.3"; leg room, front 44.7", rear 43.4"; headroom, front 35.6", rear 34.8"; seat height, front 13.9", rear 12.9"; vertical distance, steering wheel to seat cushion with seat in mid-position, 4.2"; front-seat adjustment, horizontal 4", vertical .25".

Tire size: 8.00 by 15.

Copyrighted material





Vertical valve action, a novelty in V-8s, is shown in the drawing above. Take a look at the compact combustion chamber and the centered spark plug, which shorten flame travel. At right is a cutaway of the engine. The power and compression ratio have been boosted with practically the same displacement.

requires a look at converter developments in the last five years. Not long after Buick brought out a torque converter, other manufacturers not only saw them but raised the ante. Competitors recognized that the converter alone didn't do so well at take-off.

You Could Feel Gears Change

So they added mechanical gears to give their torque converters a helping hand. These gears were of the planetary type, borrowed from Henry Ford's old Model T. They were housed in a separate transmission unit *behind* the torque converter. And they worked.

But they had one fault. When the assisting gears rolled out of the power train as the car gained speed, passengers could feel it. The car pitched forward slightly. The amount was in direct ratio to the accelerator pressure exerted by the driver.

Buick mulled that over. There had to be some way to boost acceleration without paying the penalty of a thump. The company's engineers began working on

I wanted to see what the added oomph would do on a hill. Here's the result on a 11.6-percent grade. The top picture shows the two cars starting out abreast. See how the '53 is leading the '52 at the 400-foot marker.

Copyrighted material

the problem more than three years ago. Today they've got the answer—a new kind of pump-turbine combination and a planetary-gear set *inside* the torque converter itself.

There's nothing else like it in the automotive industry. The gears do their work as you press on the accelerator from a dead stop. But as you gain speed they quietly bow out of the operation. There is no gear-changing as such. The assisting gears just gradually hand over their task to the main transmission medium, the pump and turbines.

I am stressing this Twin Turbine Dynaflow at the expense of that brand-new V-8 engine. There's a reason.

The company's engineering charts show that less than a third of the car's increased performance on the lower end of the acceleration scale can be attributed to the engine. The rest comes from that transmission.

Zero to 80 in 20 Seconds

I drove a Roadmaster, biggest-powered car in the Buick stable, at the General Motors Proving Ground. For fun, I logged the acceleration time starting in Low Range (emergency low) on the selector quadrant, shifting to Drive Range for the sprints when the speedometer indicated 50. Here are the results:

Zero to 30 miles an hour—4.4 seconds compared with 5.2 seconds for the old Roadmaster.

Zero to 60—11.4 seconds compared with last year's 14.7.

Zero to 80—18.9 seconds compared with 23.8.

Then I tried out the high-speed acceleration. That's the amount of sass you get from an engine when you pull out to pass on the open highway. It took just 7.4 seconds for the speedometer needle to climb from 60 to 80 miles an hour. That compared with 10.8 seconds for last year's car.

And—to do justice to the new engine—that's where the power comes in. Buick's rugged old straight eight produced 170 horsepower last year. The new engine delivers 188—just two horsepower less than the '52 Cadillac. Buick's V-8 is the first ever put into production by the company in all its 50-year history.

The V-8 isn't confined to the Roadmaster series. The Super series has it, too, with a horsepower rating of 170. Only the Special, third in line among Buicks, retains the straight eight.

You Use Less Gas

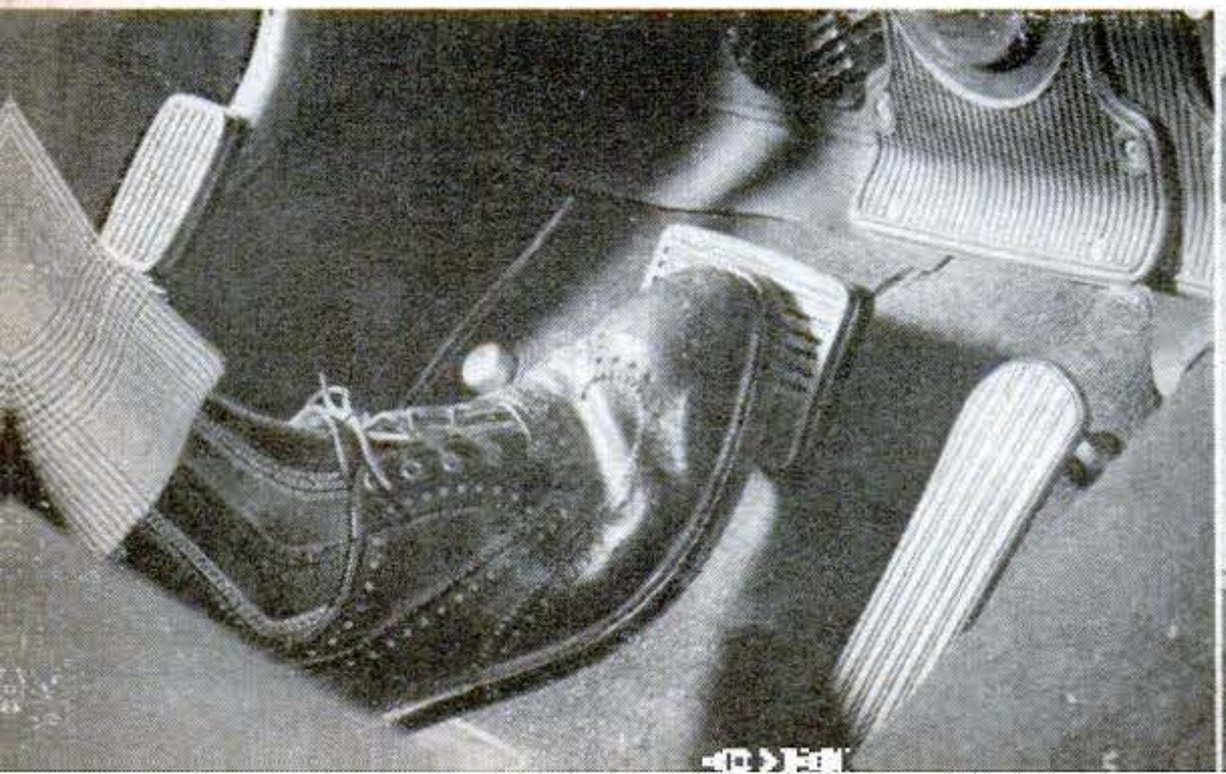
The new V-8s are economical. Most of the stinginess on gas comes from a higher, and exceptional, compression ratio—8.5 to 1 compared with 7.6 last year. Compress the gas-air charge more in the cylinders, and it burns better. I registered more than 17½ miles per gallon at a steady 50 miles an hour on premium-type fuel in the Roadmaster. That compared with less than 16 miles per gallon for the lower-powered '52 job.

The new engines have a couple of special gimmicks to boost their efficiency and save wear. The cylinders of a V-8 in today's designs incline from the vertical at an angle of 45 degrees. Overhead valves tend toward the same slant.

But not Buick's. This company's valves incline 45 degrees from the axis of the cylinders so that they operate straight up and down. That's done so that the rocker-arm covers can be mounted on a

[Continued on page 248]

More and more people are using the left foot on the brake. This pedal position is a help.



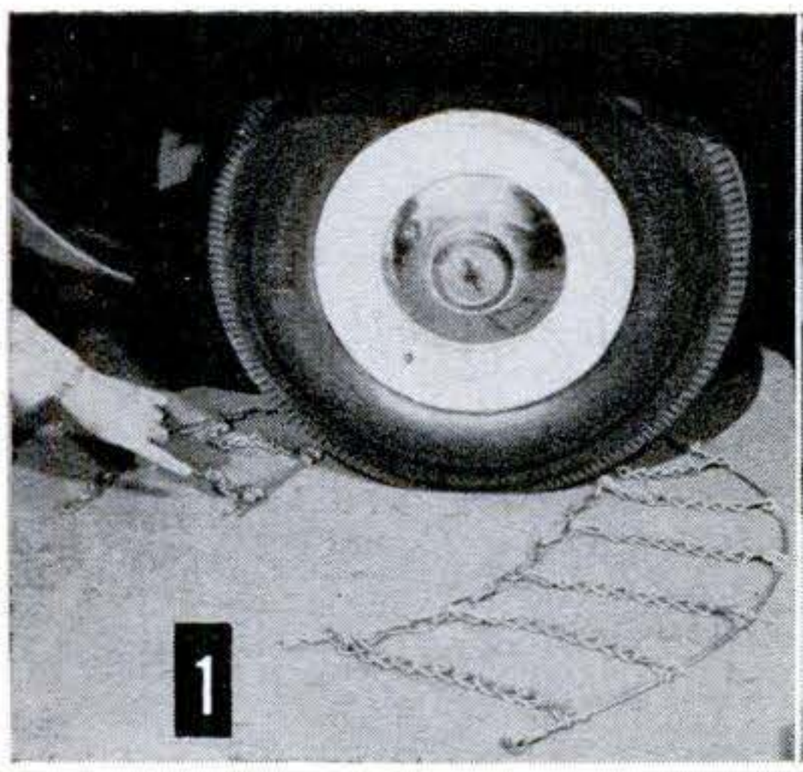
Buick's first production V-8 carries this emblem—also the lid handle—on the rear deck.

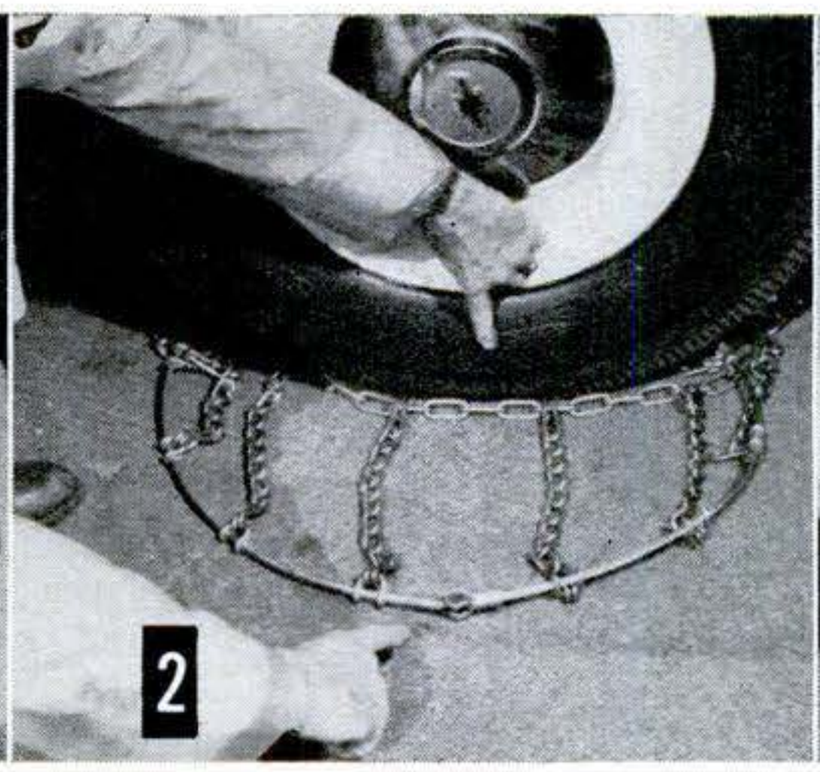
pyrighted material

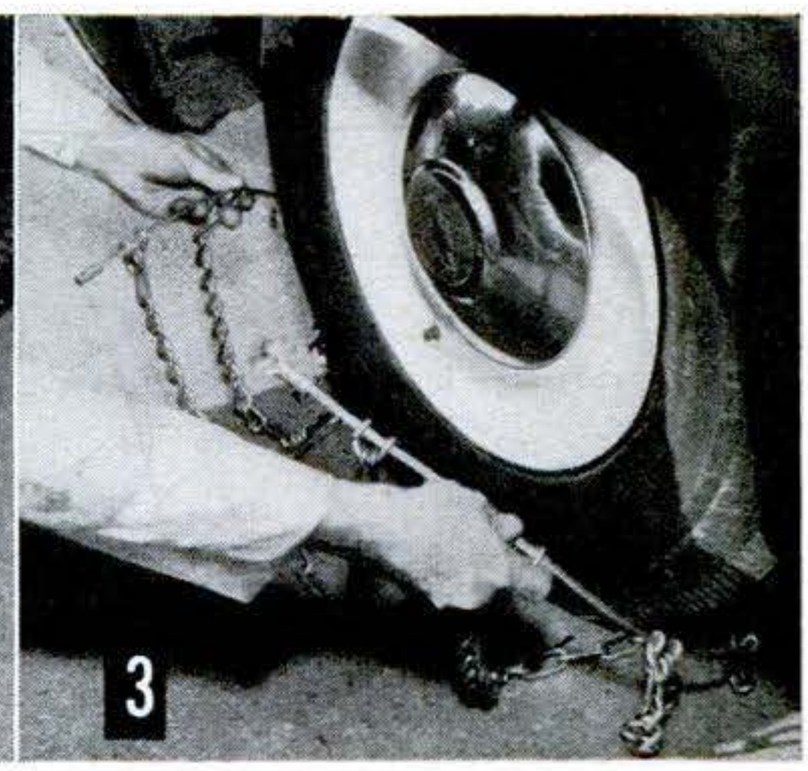
Putting On These Chains Is Painless

YOU now can put on tire chains without moving the car or jacking up the wheels. Chains of a new type wrap around the tires. Putting them on at first seems more complicated than tying a sheepshank knot. But when you get the hang of it, the job goes fast. The chains, in fact, go under the name of Minit-on. A single chain has been put on in 20 seconds. Cleveland Chain & Mfg. Co., Cleveland 5, makes them.

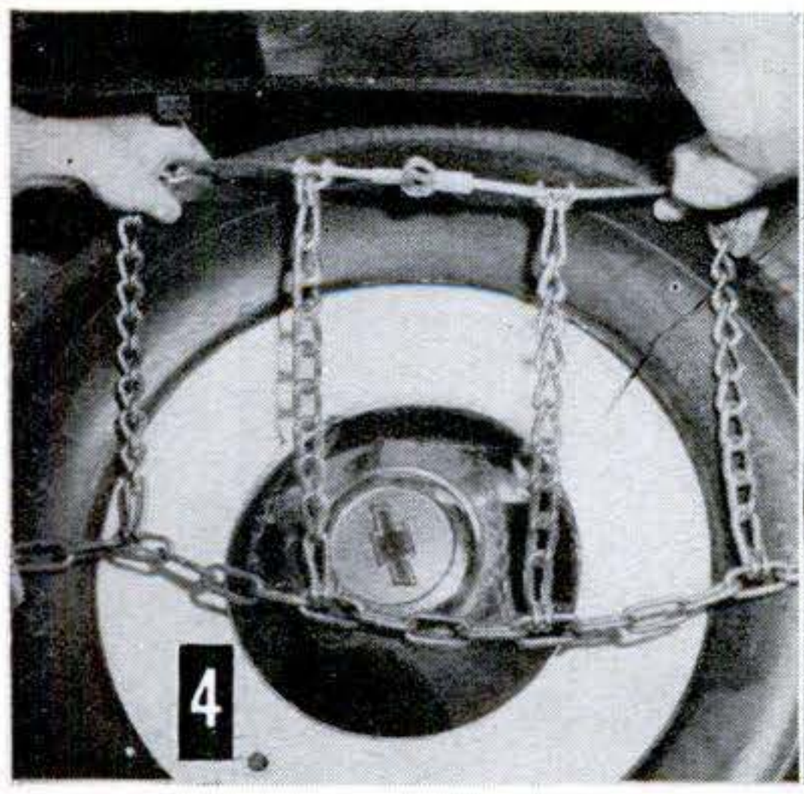
A CABLE and special fasteners are substituted for conventional links along one edge. These hold secret of speedy mounting. Package includes sleeves to pull on over coat.

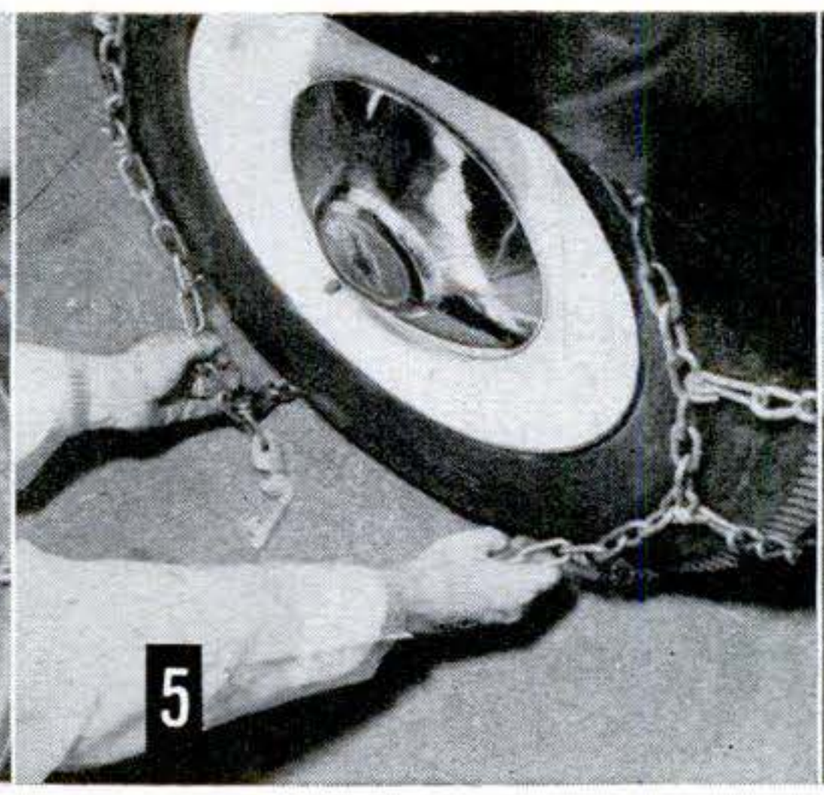


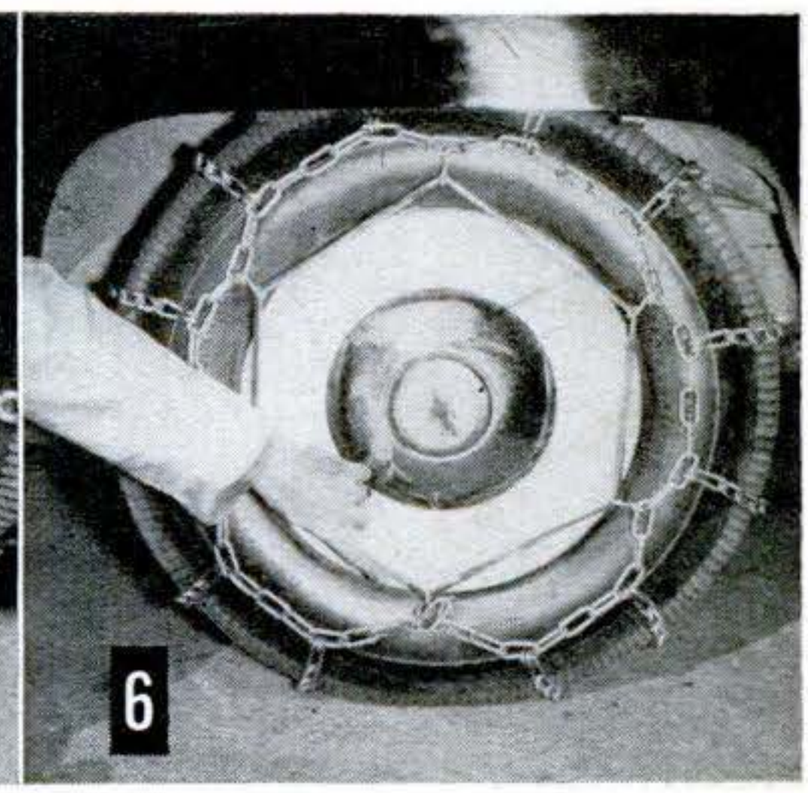




YOU WHIP THE CHAIN around tire like this (left above) in early stage of mounting. End of cable indicated by finger is then joined to fastener at right and entire chain dragged around to the left and until second fastener is directly in front of tire (center photo). This fastener is then loosened and chain jerked up around sides of tire (right above).

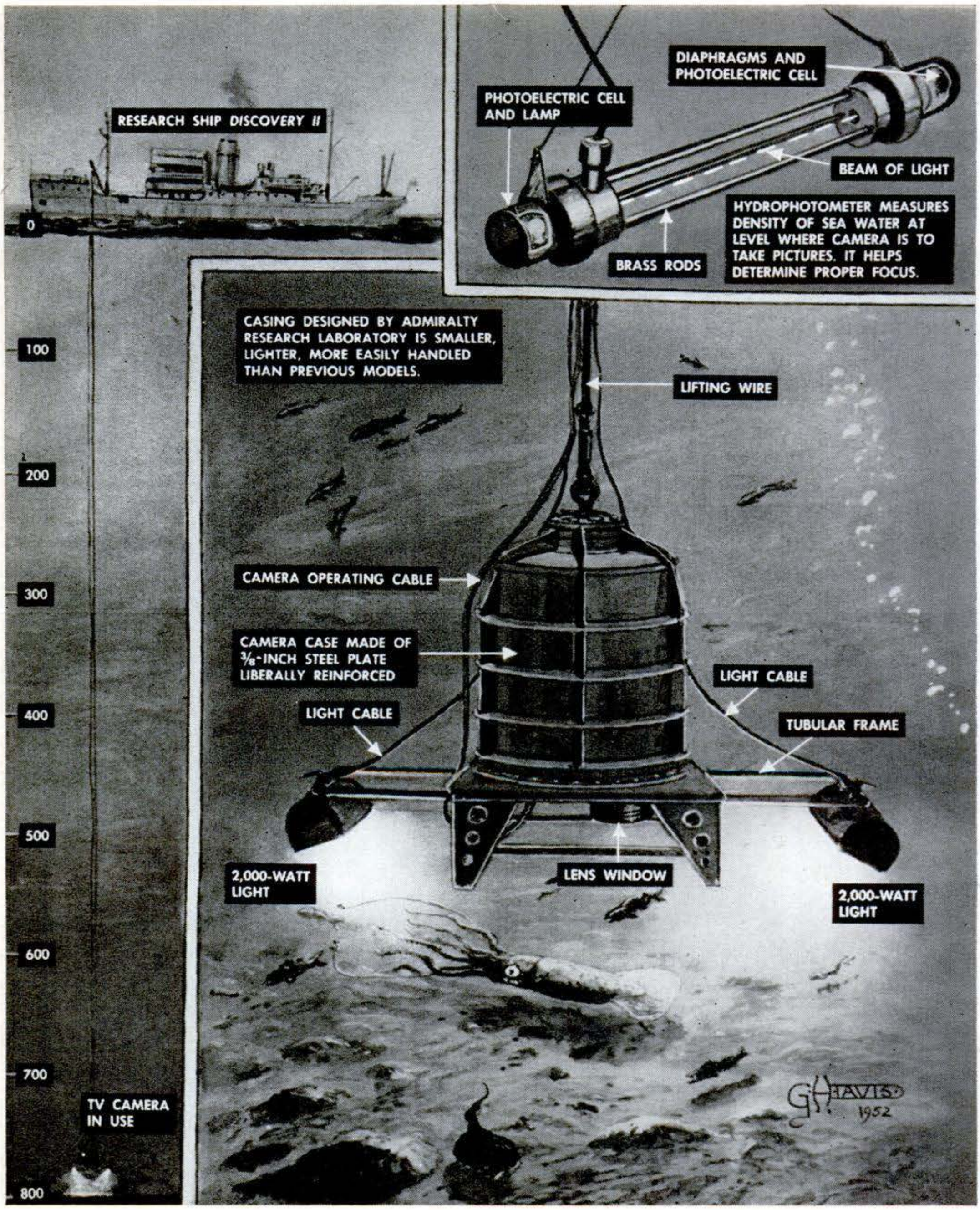






FASTENER AT TOP can finally be connected and the chain pushed over the top of tire (left above). Pull-on sleeves are especially handy at this point. Chain then droops down around the tire in running position except for fastening the conventional snap (center photo). Applying tightener completes the job (right above). Chain can be removed easily, too.

Copyrighted material



New TV Camera Explores Ocean Floor

ACROSS the Bay of Biscay and down the coast of Portugal to the Azores, scientists aboard a British research ship have been studying shoals of fish and the ocean bottom on television.

A new submarine TV camera, which can be used 1,000 feet or more below the surface, practically fills a three- by two-foot steel casing. Specially reinforced to withstand powerful water pressures, the casing weighs 896 pounds, but that is less than half as much as previous models.

Two 2,000-watt bulbs light the TV camera's subjects. The cameramen use a new instrument called a hydrophotometer to help determine the correct focus.

Copyrighted material

Jet-Powered Dishwasher runs on water pressure from the kitchen sink. Dishes are completely immersed in water, revolve in rack for washing, rinsing. Bessen Co., Box 3561, Chicago 54, makes it.

New Machines Cut Homework

Ice Maker that hooks into the water system eliminates the chore of filling ice trays in the new Servel refrigerators. Half circles of ice are frozen without trays, stored, replenished automatically.

Two-Level Sink has a waste well with its own drain and plug in an upper shelf at one side. It is lined with a perforated basket, can also be used to chill food. American-Standard calls it the Duwell.

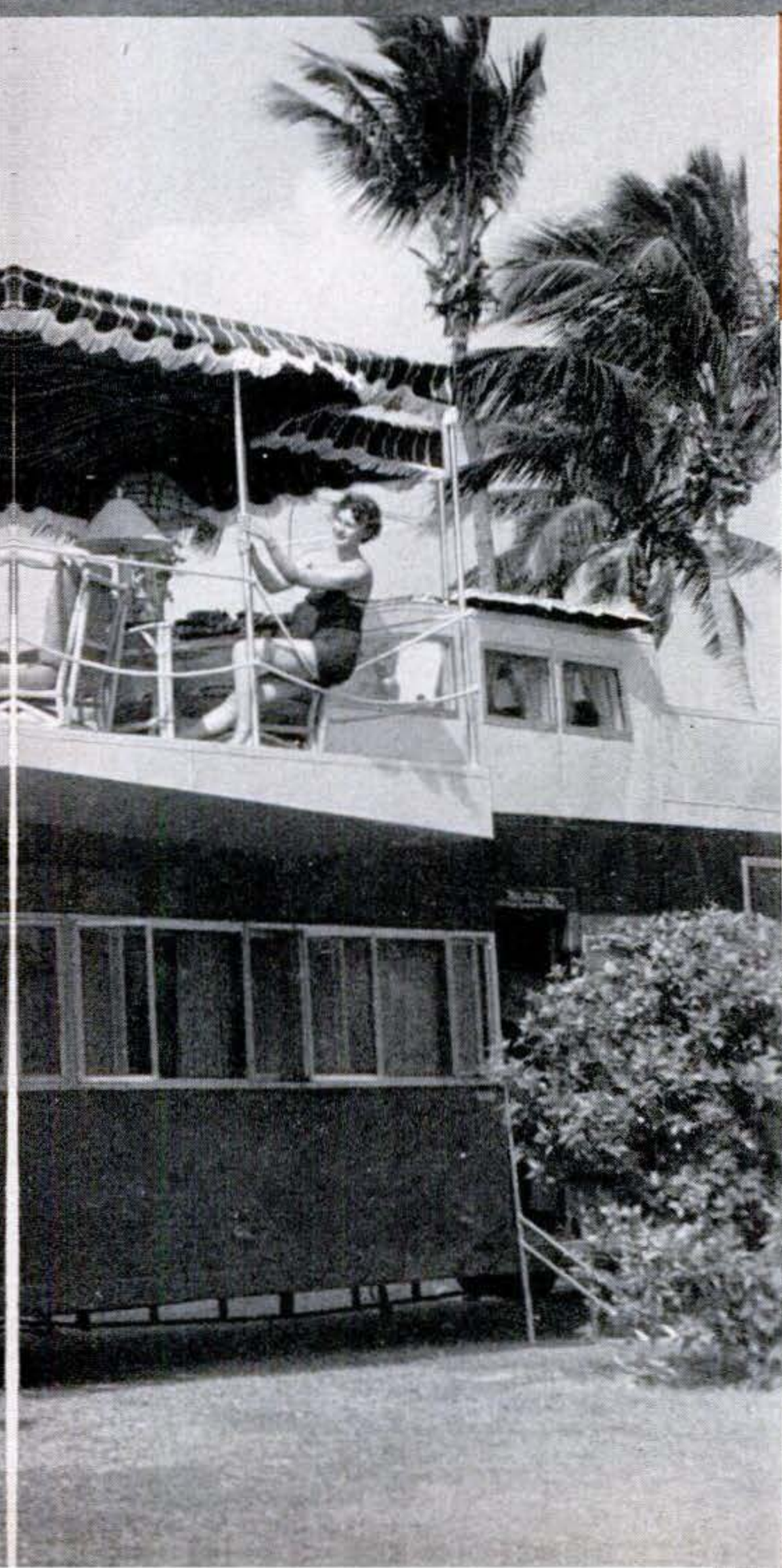
Double-Duty Machine that washes and dries clothes in one continuous operation can turn out load ready for ironing in 68 minutes. Arrows show how air is routed during drying in Bendix Duomatic.

World's Biggest Trailer Crosses Continent

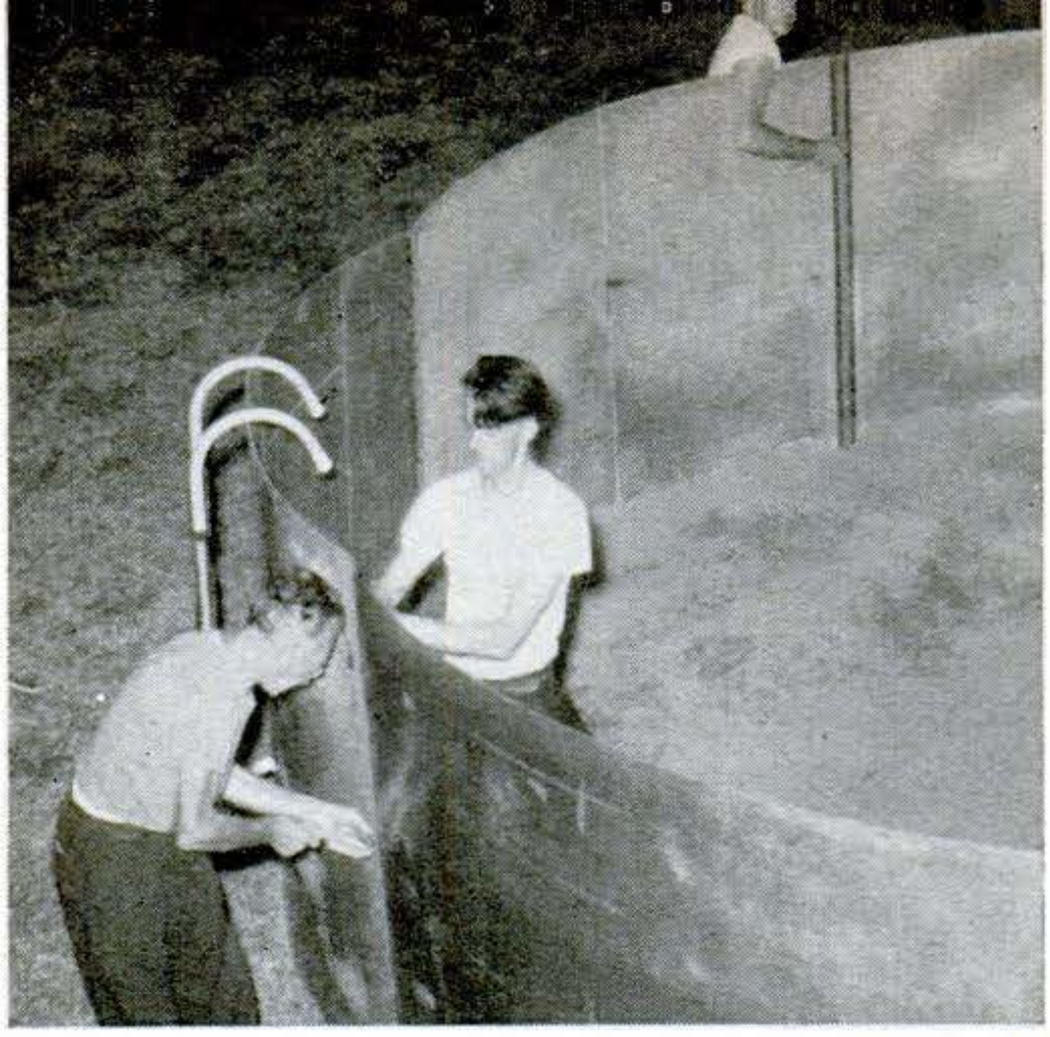
This luxurious leviathan allows a millionaire gypsy to take his swimming pool and helicopter landing deck right along with him.

By Hartley E. Howe

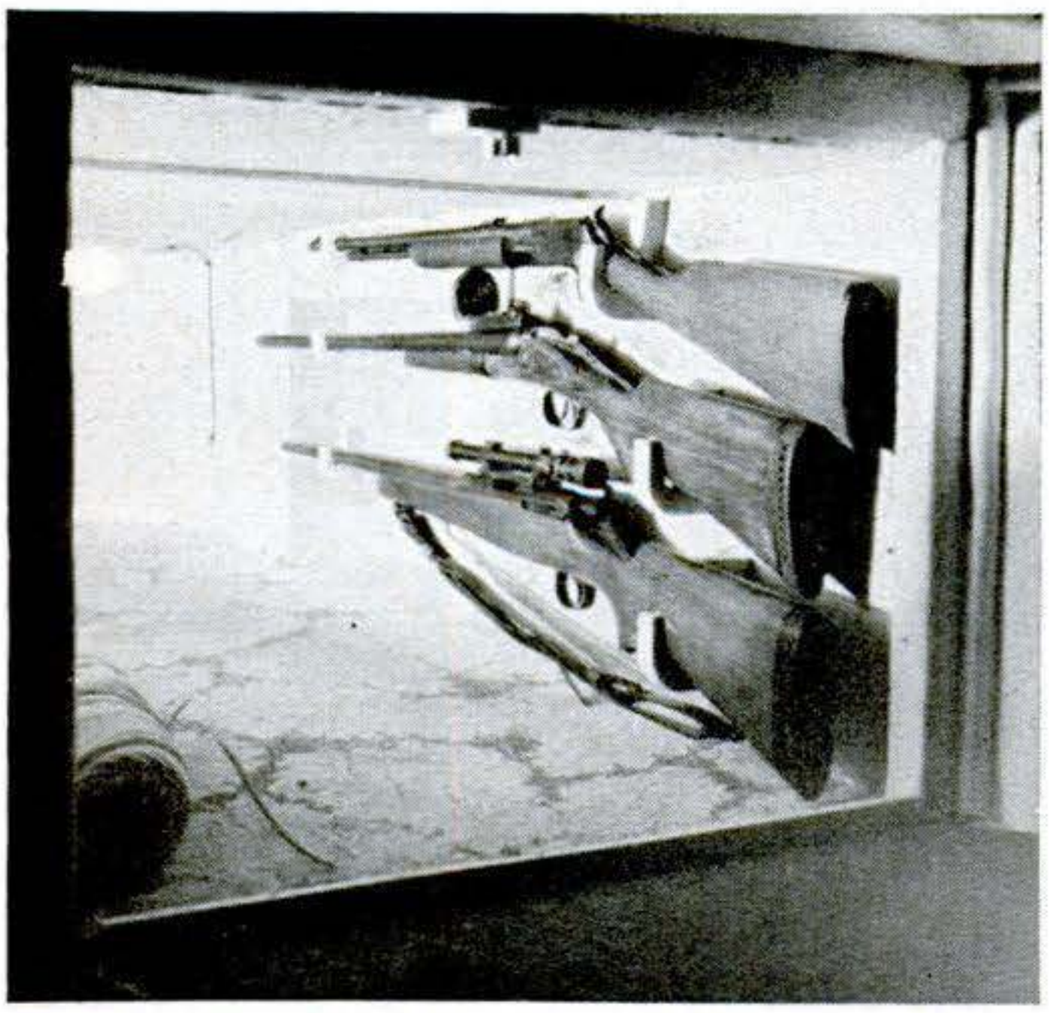
SO YOU take that $75,000 that keeps getting mixed up with the socks in your top bureau drawer and you buy yourself an Executive Flagship. The day she's delivered you take off, you and the missis relaxing in overstuffed lounge chairs while your cook broils a steak and your skipper, up forward in the driver's



EXECUTIVE FLAGSHIP, a huge rust-and-ivory land yacht, is luxuriously equipped for the footloose tycoon. Above, the Flagship is ready for the road, her portable 10,000-gallon swimming pool (left) and folding sun deck (below) stowed for travel. Diving board, deck furniture, railing and awnings all go into cabinets in the trailer. Swimming pool, 23 feet across, is dismantled and packed into storage space above the cab.



PORTABLE SWIMMING POOL is set up in about an hour by bolting together six curved aluminum wall sections. Yard of sand in bottom steadies sides, then a baglike plastic liner is inserted. Filled, tank holds 5½ feet of water.



"ELEPHANT GUNS," says Mid-States Corp., builder of the Flagship, "are in case the owner wants to go on a safari to Africa. They're located in the dining nook." No elephants were encountered on California-Florida run.

seat, pushes along at a steady 50 m.p.h.

Late that afternoon the skipper backs into a mountain meadow. He and the road officer—second in command—break out the swimming pool, and an hour later you're doing jackknives from the sun deck . . .

Okay, okay, this is strictly dream stuff. But the Executive Flagship, biggest house trailer ever to hit the road, is no dream. If you have $75,000, you can go buy it tomorrow and drive away.

For the Flagship is the very real creation of the Mid-States Corp., which claims to be the world's largest maker of mobile homes—house trailers to you. It weighs 18 tons, rolls on 10 wheels, sleeps six, and not only has a portable swimming pool with diving board but is complete with kitchen, two bathrooms, a seven-foot bird's-eye maple bar, two refrigerators, wall-to-wall carpeting, radiophonograph, 21-inch TV, movie screen, indirect lighting, wine cellar, air conditioning, intercom, radiotelephone, "pooch porch" for the dog, and three elephant guns in case you have to shoot your way through a herd of pachyderms on the Lincoln Highway.

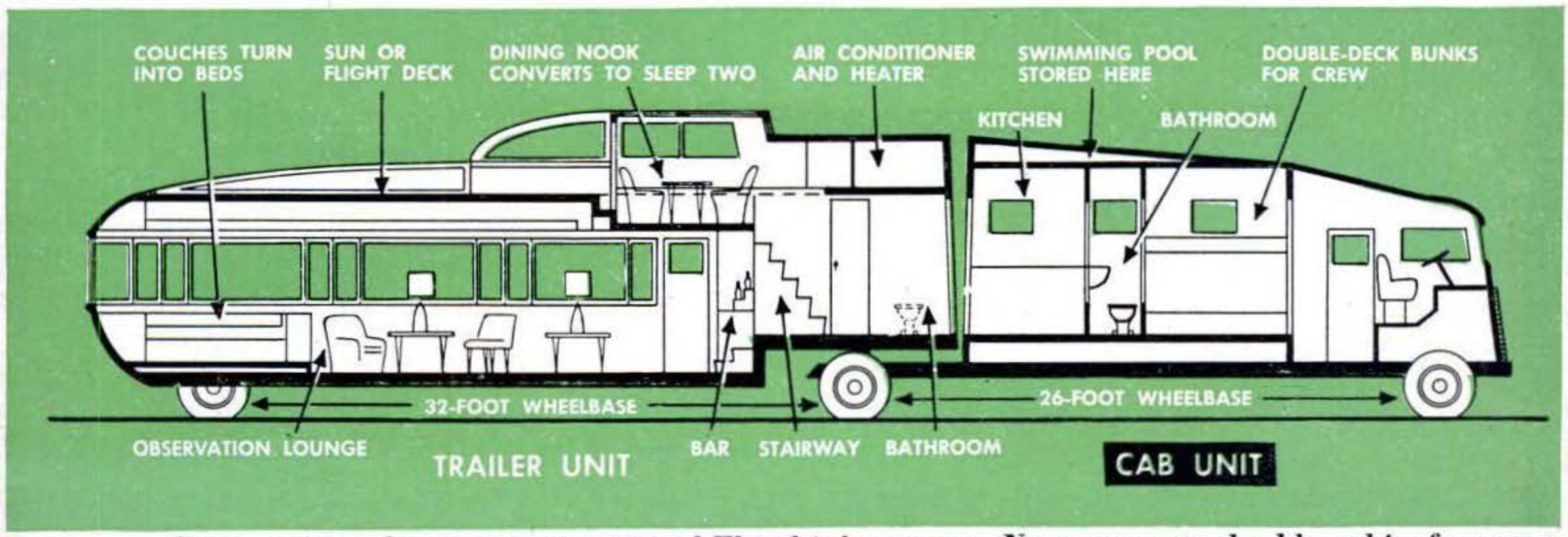
And if this isn't enough for you, the upper sun deck can be used to board your private helicopter.

All this is packed into a 65-foot articulated tractor-trailer. The Flagship is 13½ feet high and nine feet wide, but the sun deck unfolds to 16-foot width. The power plant is a 128-horsepower International truck motor with 10 for-

Side view points up 65-foot over-all length of Flagship. Two sections are permanently joined.

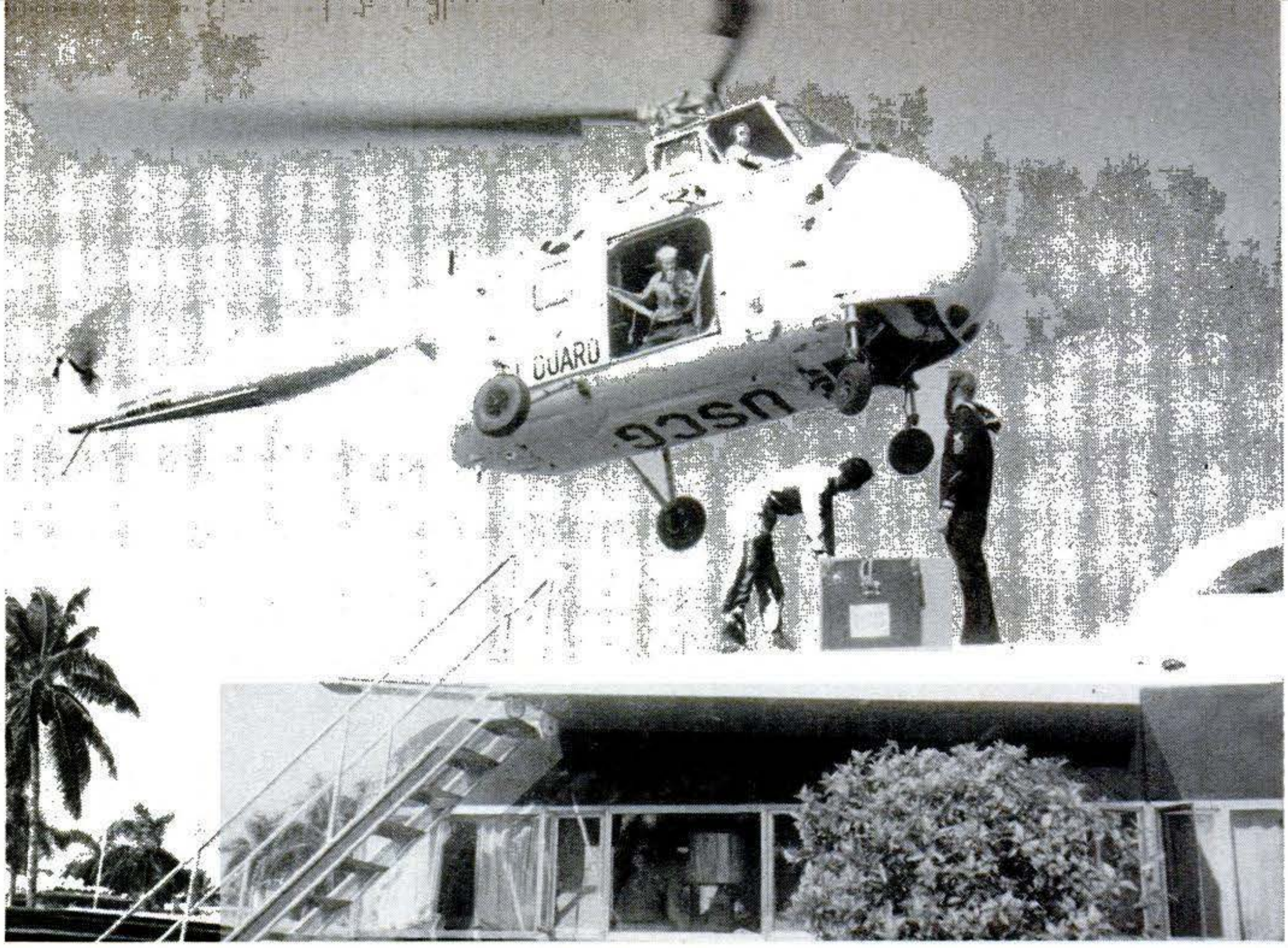
Copyrighted material

Frame of super trailer is 2- by 2½-inch angle steel. Aluminum side walls are riveted on.



Cross section shows arrangement of Flagship's rooms. Note separate double cabin for crew.

Copyrighted material

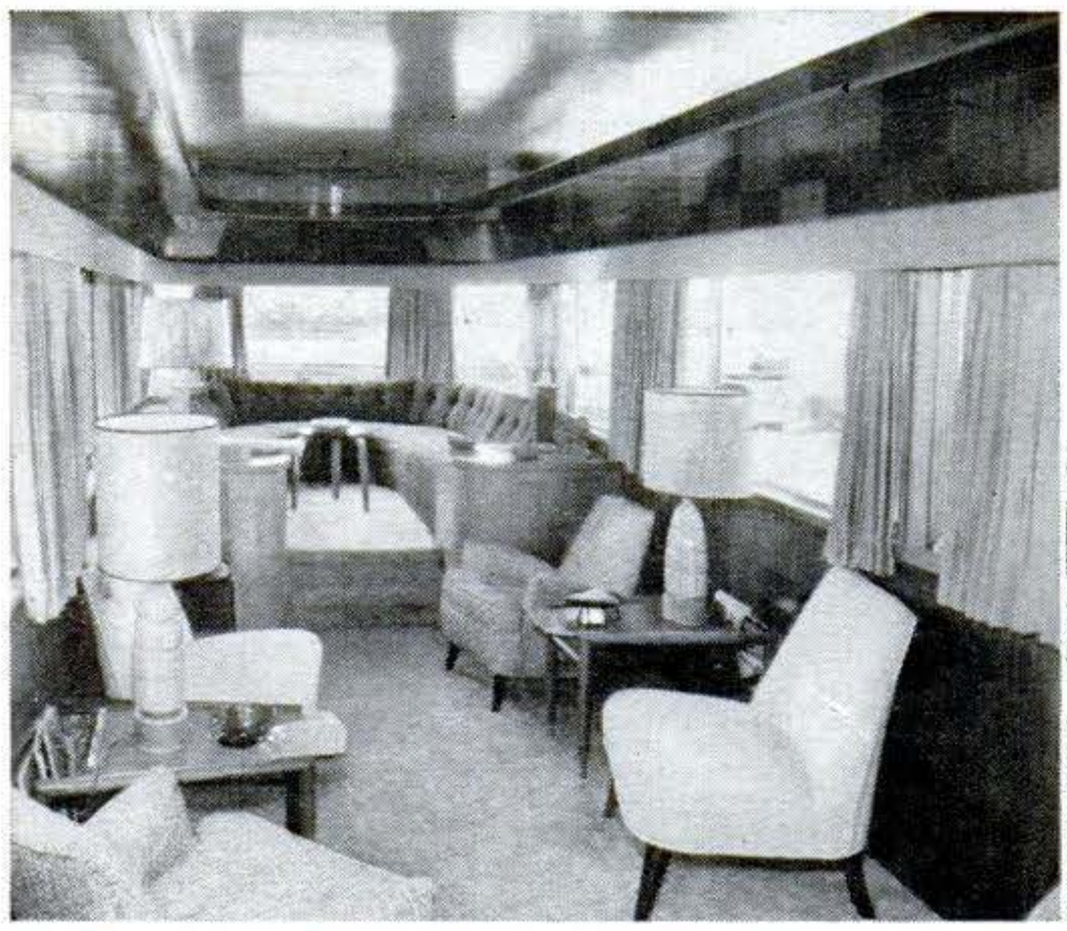


TOP DECK is reinforced, can be used to land light helicopter (picking up blood plasma, above). Folding wings, opened with a winch, give sun deck a total of 250 square feet.

ward speeds—five standard speeds plus a two-speed rear end.

Designed by Peter Kohler, the Executive Flagship is the dream child of William B. MacDonald Jr., who started out 20 years ago as a bus driver and now is president of Mid-States. His company turns out 7,500 house trailers a year. So far only one Flagship has been built, but MacDonald reports nibbles and expects more on the road soon.

Anybody who sets out to tour the world in luxury in his own Flagship has one chore to attend to before starting. The Flagship is so big that on its recent shakedown cruise from Los Angeles to Miami it required a special permit from every state except Arizona. END

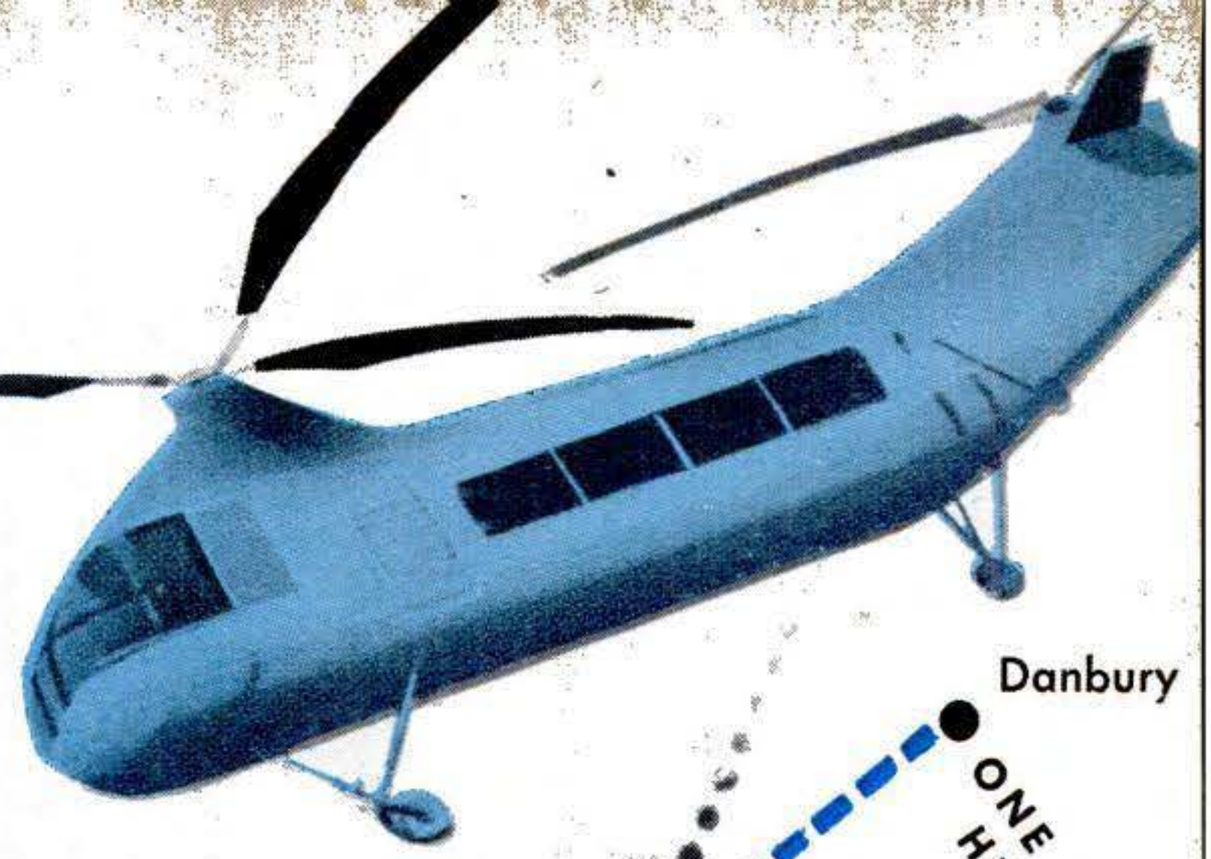


INTERIOR, facing aft, looks like Pullman observation car. Twin couches in stern turn into beds. Two people can sleep in dining nook overhead, reached by stairs.

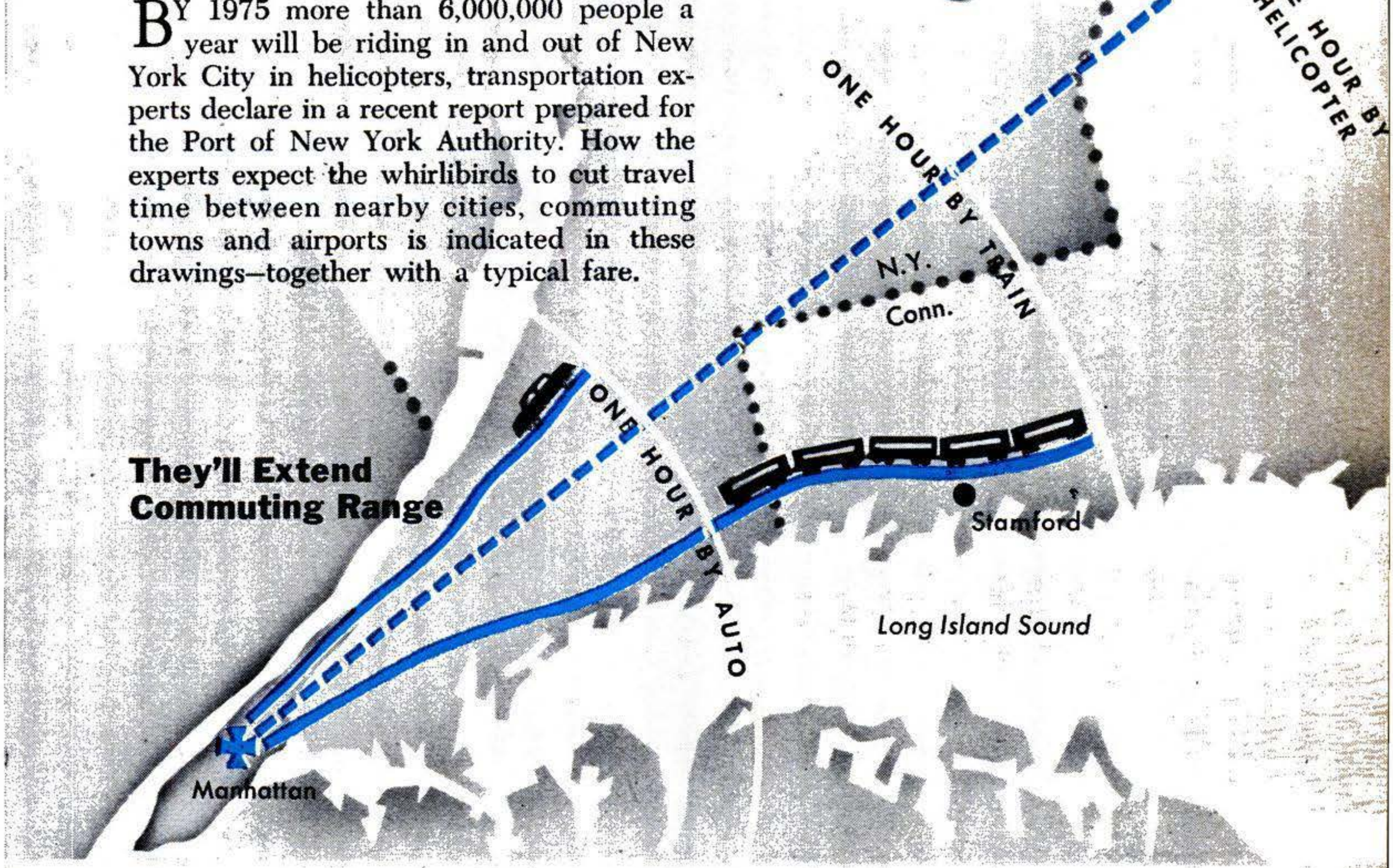
WILLIAM B. MacDONALD JR., President of Mid-States, stands on Flagship gangway, which stows away for road travel. He got into trailer building through hauling units for others.

Copyrighted material

'Copter Cabs Are Coming

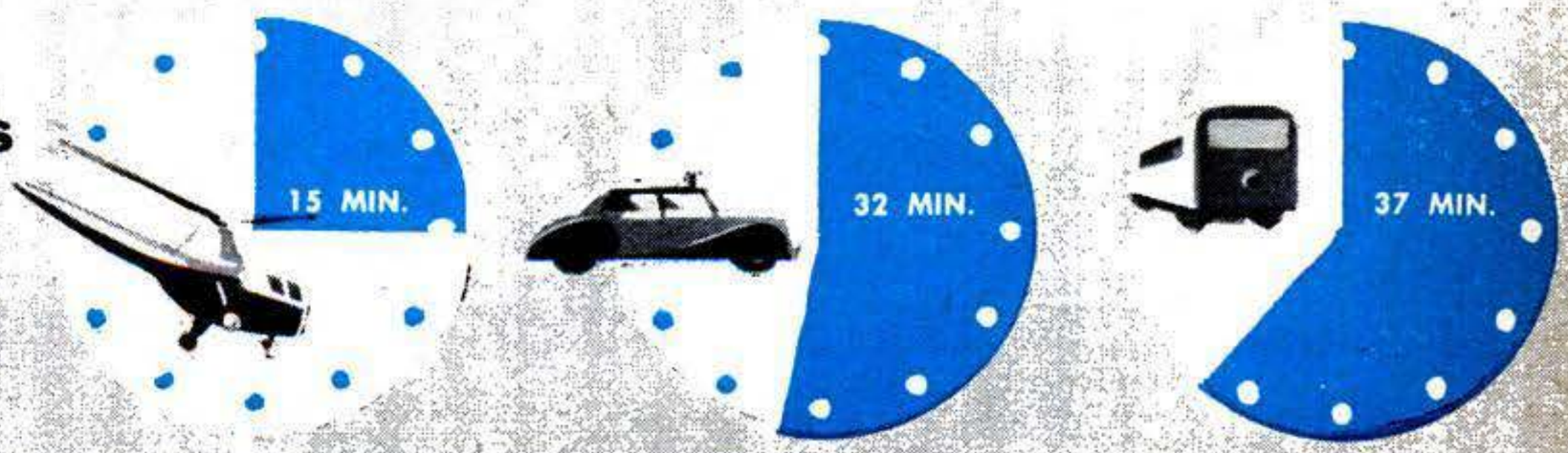


BY 1975 more than 6,000,000 people a year will be riding in and out of New York City in helicopters, transportation experts declare in a recent report prepared for the Port of New York Authority. How the experts expect the whirlibirds to cut travel time between nearby cities, commuting towns and airports is indicated in these drawings—together with a typical fare.



They'll Extend Commuting Range

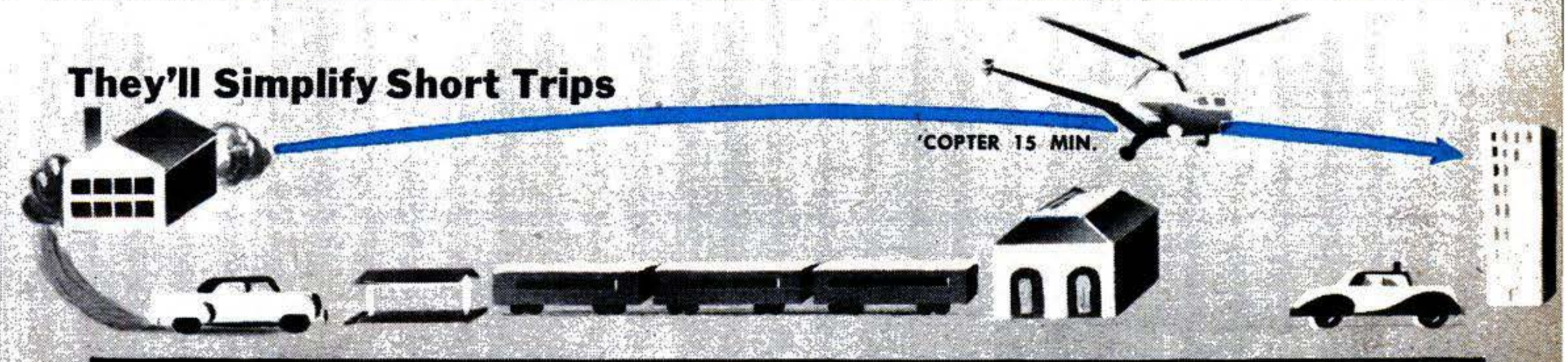
They'll Speed Airport Connections



FIGURES APPLY TO MANHATTAN — N. Y. INTERNATIONAL

'COPTER $4.50 | TAXI $4.10 | BUS $1.25

They'll Simplify Short Trips



CAR 10 MIN. | TRAIN 50 MIN. | TAXI 30 MIN.

Uncle Sam's Big Shooting Gallery

SHOTS fired by Navy scientists through the 18-inch hole in the near end of the 500-foot shed above, at Inyokern, Calif., are expected to help improve the design of rockets. They are telling shots because they are photographed in flight.

Twenty-three pairs of electronically controlled cameras (right), tilted upward 45 degrees, take millionth-of-a-second flashlight pictures of the missiles as they zing past. Each camera takes six exposures on a single plate.

Huge Turbine Turns Into Pump

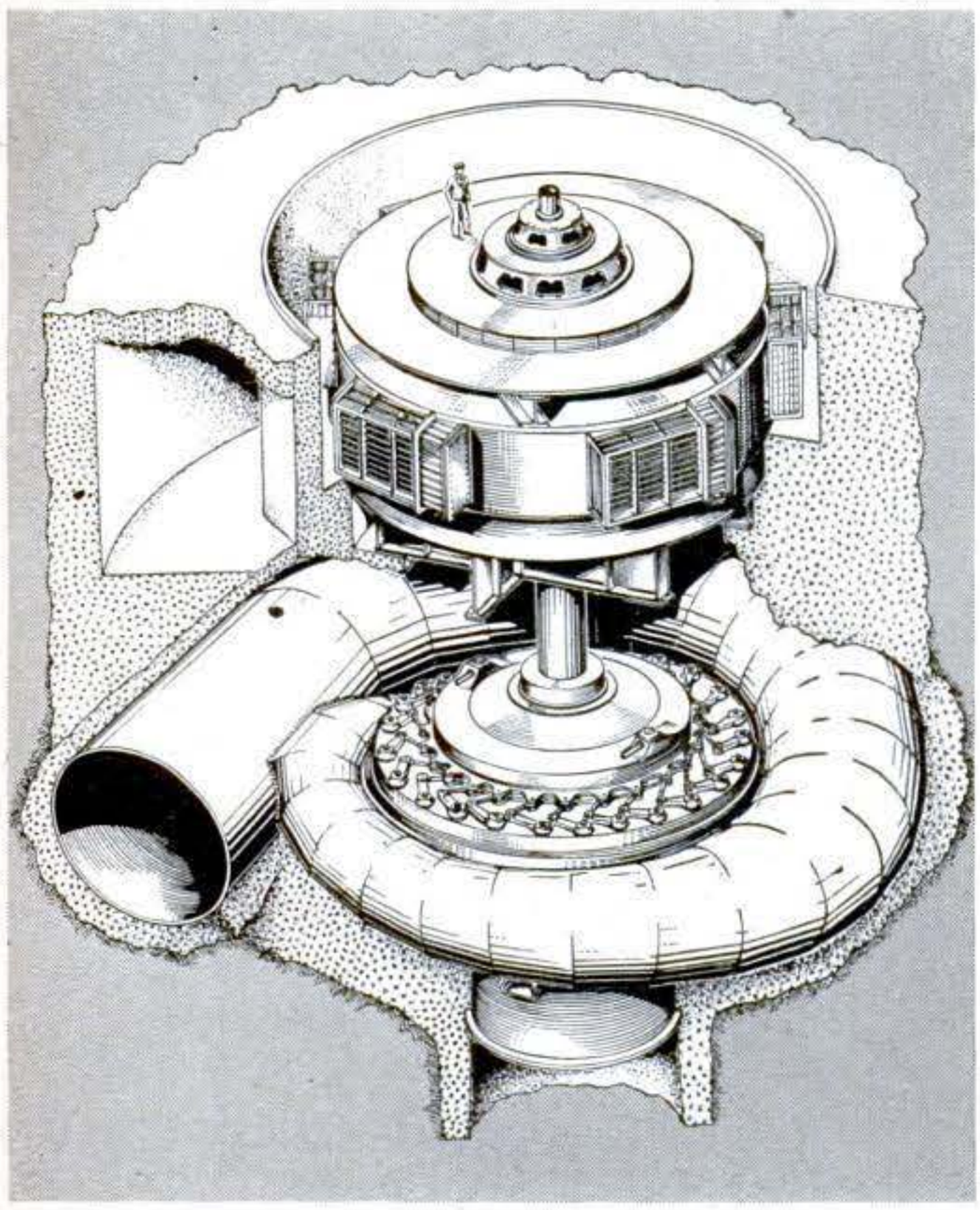
THE world's largest reversible pump-turbine, shown in the drawing below as it will look installed, is expected to be ready for work at TVA's Hiwassee Dam in North Carolina late in 1955.

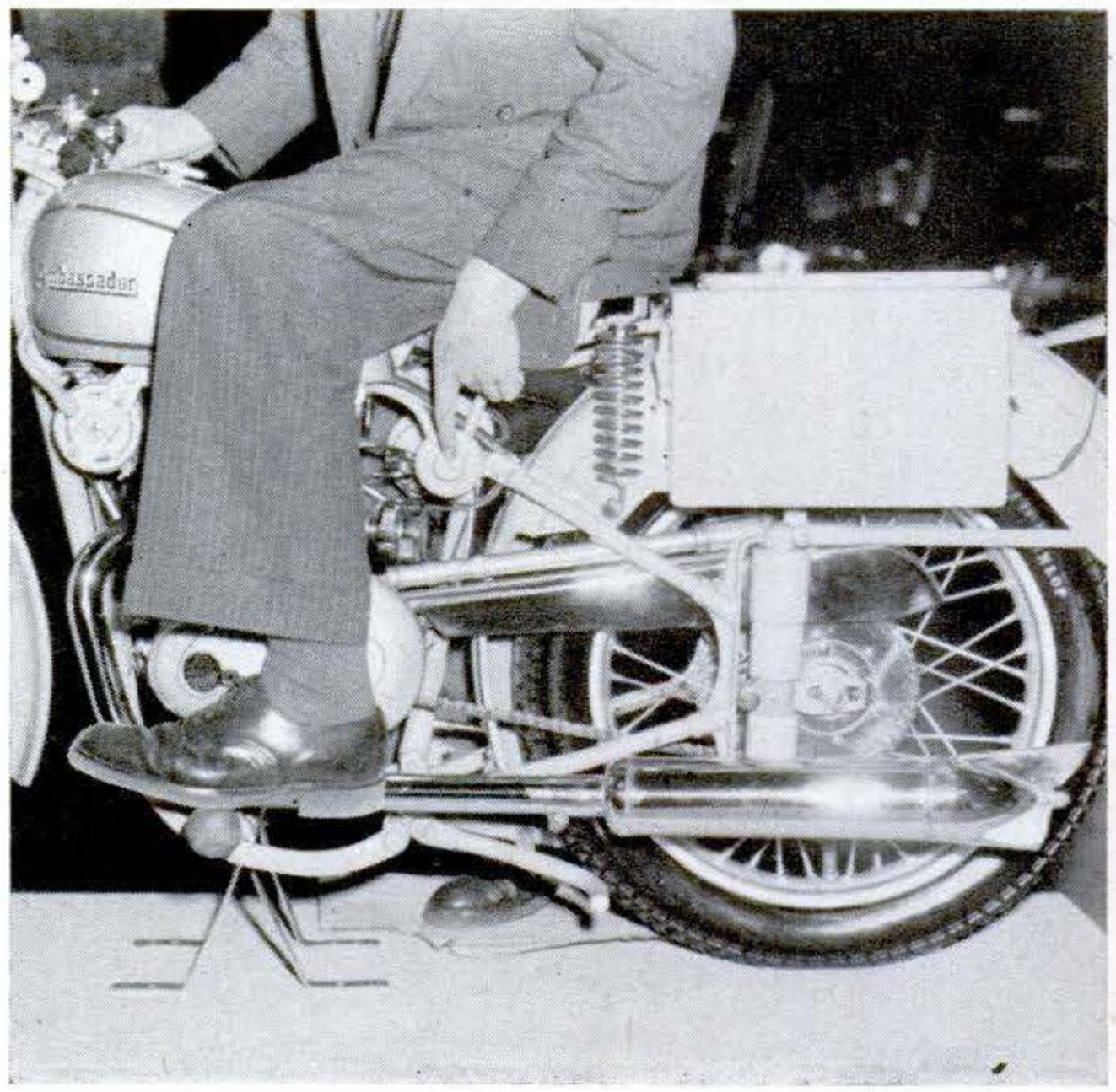
As a water-driven turbine, it will generate 120,000 horsepower. When reversed and driven by a 102,000-horsepower motor, it will be able to pump 3.3 billion gallons of water a day. Allis-Chalmers is building it.

Motorcycle Has Self-Starter

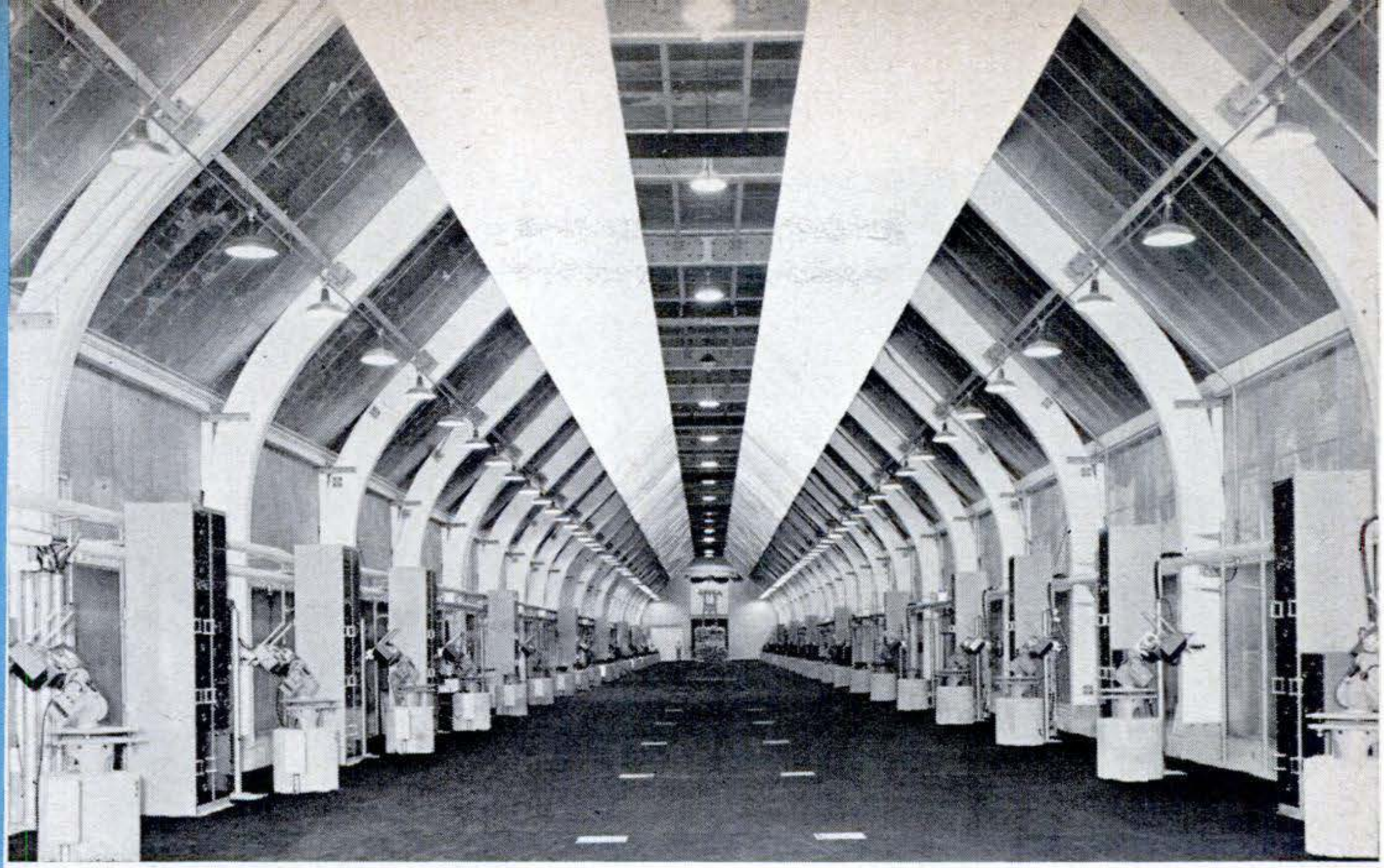
BRITISH motorcyclists may soon have no more kicks coming—to start, that is. The machine in the photo below has a battery-operated starter motor under the fuel tank. The battery, a six-volt model mounted in two sections, straddles the rear wheel. The rider merely has to press a button beneath the seat to start the motorcycle.

The battery is said to be capable of 1,000 starts without recharging.





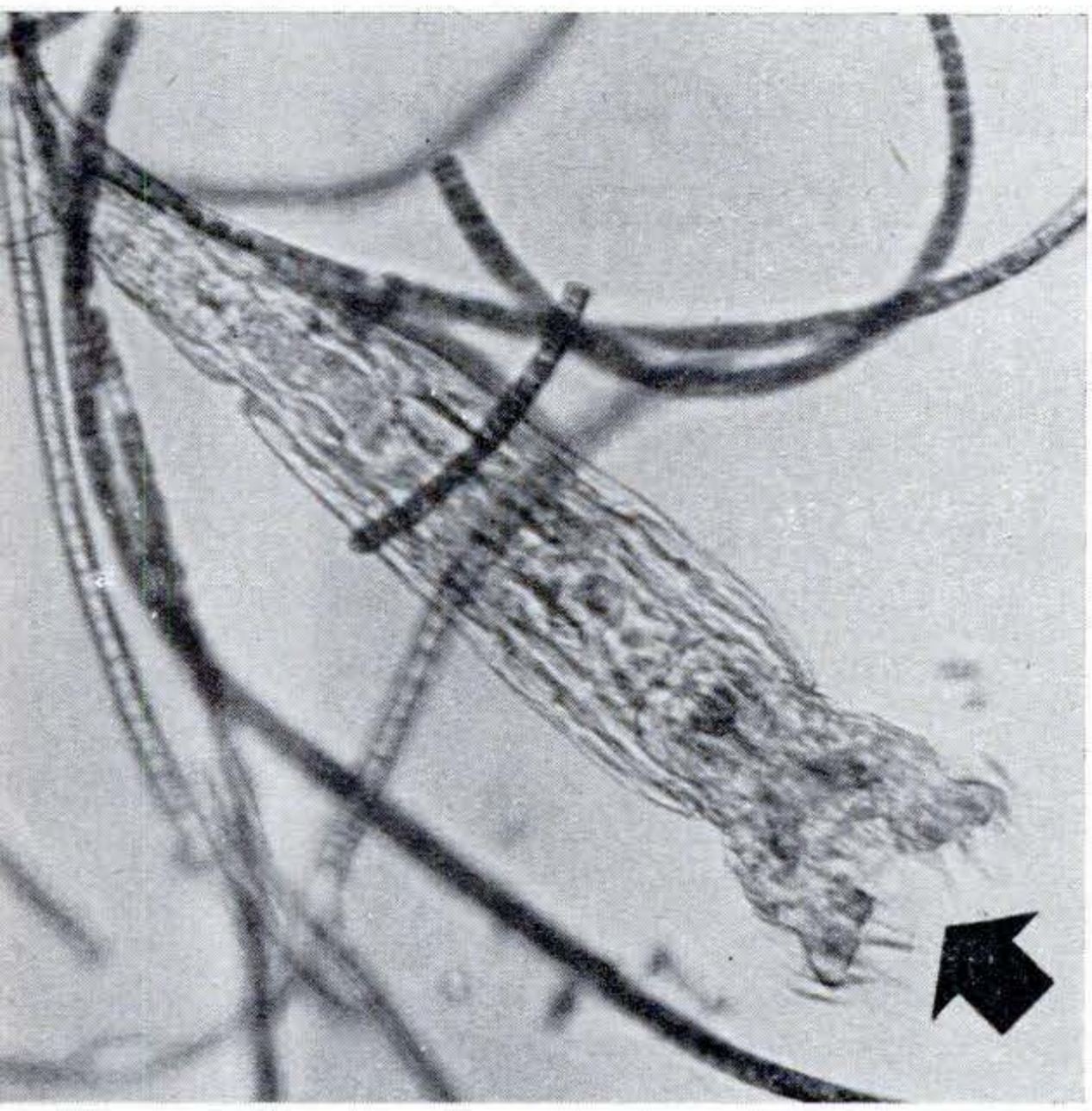
Copyrighted material



Fastest Movement "Stopped"

THE fastest-moving parts of any living animal are the tiny hairs on the head of a microscopic organism called a rotifer (below). They vibrate so fast that they look like whirling wheels. In previous photographs they have been mere blurs.

Now Capt. E. L. Gayhart of Johns Hopkins University, with a millionth-of-a-second flash, has made the "wheels" (arrow) appear to be standing still.

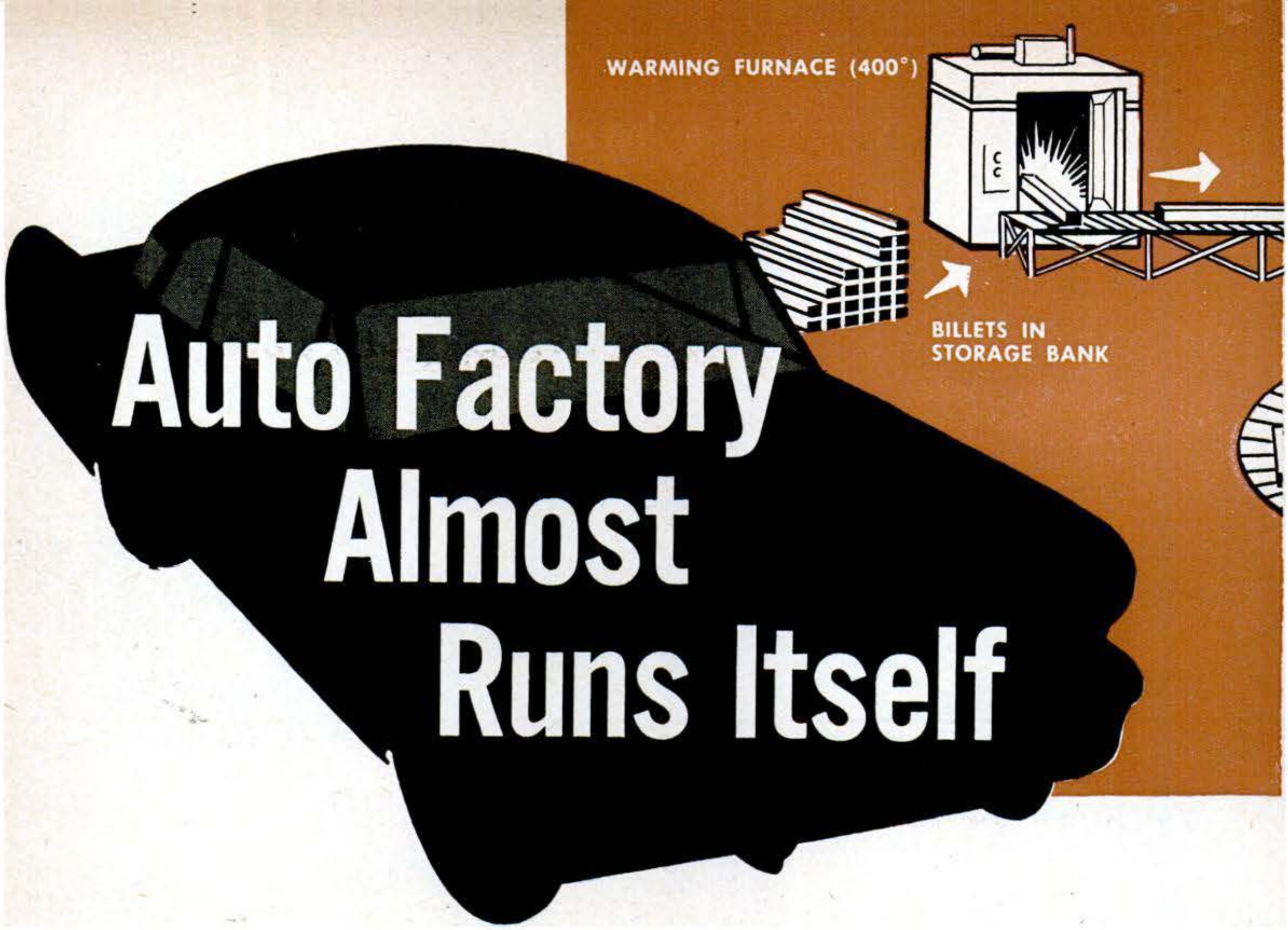


75 years ago this month

Popular Science Monthly reported:

"OVERWORK connected with business is always sure to be a more tangible factor of mental disease than overwork from study, because of the much greater liability to its invasion during the business period of brain-life than the study period. At Bedlam Hospital Dr. Savage finds that there are many cases in which overwork causes a breakdown, 'especially if associated with worry and money troubles.' Among the women, the cases are few in number."

Copyrighted material



Auto Factory Almost Runs Itself

Crankshafts, blocks and body panels march through machines untouched by human hand. Someday whole cars may pop out.

By Carl Konzelman

AT ITS Buffalo body-stamping plant, the Ford Motor Co. has taken the wraps off a dramatic new kind of production line that turns out auto parts better and faster—with a minimum of human failure and human drudgery.

At Detroit, the Chrysler Corp. is rushing to completion its second crankshaft forging line created on a similar theory. Its first, disclosed last September, is so successful that many other industries are examining its methods of forging complex parts with the idea of following suit.

Cleveland has its own contribution in the same field—a Ford engine plant that ranks among the first to use the new principle to out-mass-produce the mass-producingest industry of them all.

All three plants are examples of the auto makers' newest, brightest gimmick—automation.

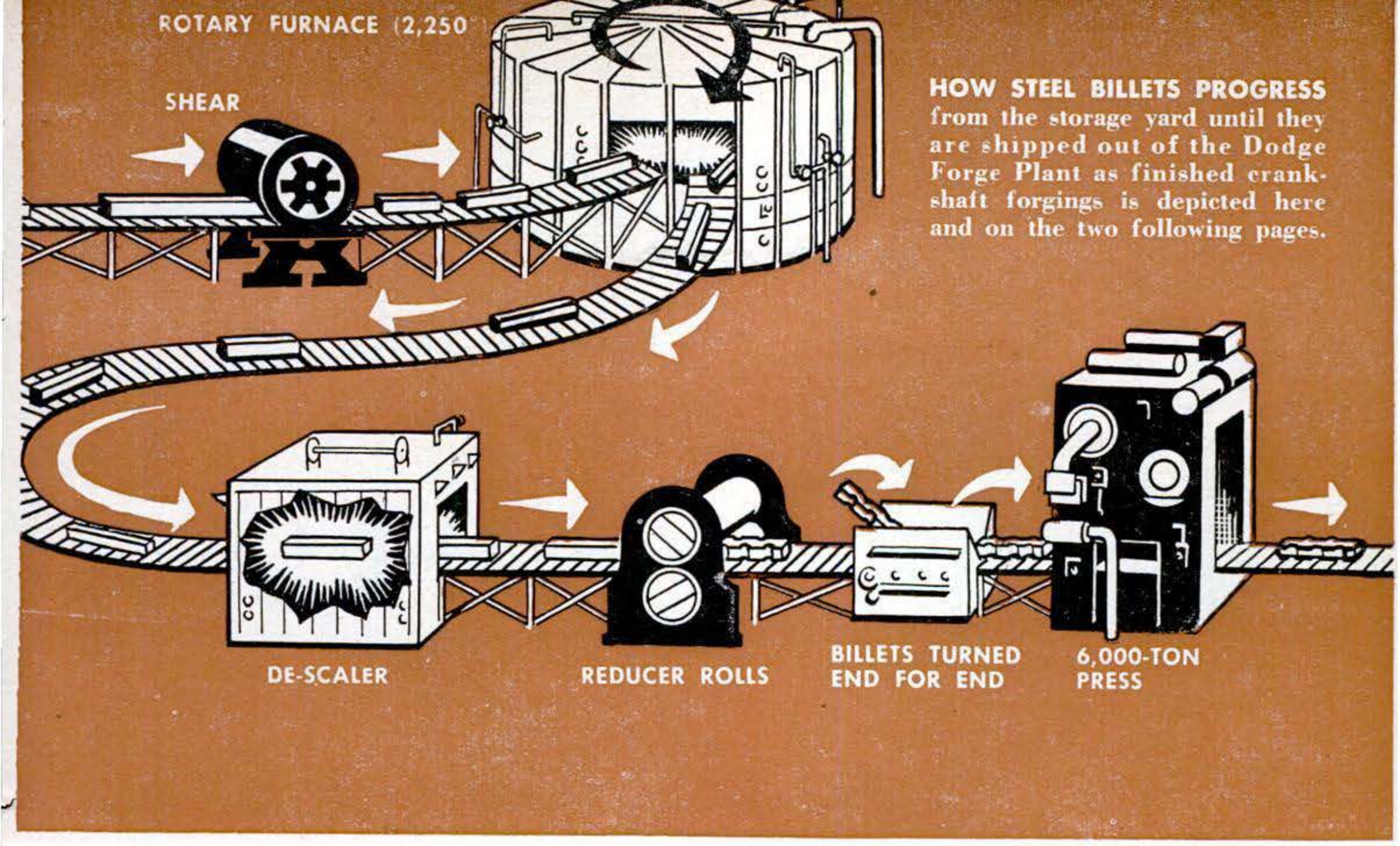
Automation is more than a matter of individual machines. Actually, it is the tying together of existing machines with electric controls, shuttles, trips, "iron hands." The piece is taken out of one machine, moved to the next one on the line and inserted, all without human help—without the hard work and hazards of manhandling heavy parts and the tedious repetition of feeding machines by hand. .

Skilled Manpower Still Needed

Will automatic factories mean vast numbers of unemployed? The answer to that might be found in another question: Did the original coming of mass production put men out of work? Look at industrial payrolls today. The fact is, manpower is short, and every man saved one place will be used someplace else. Skills, and people capable of learning skills, are in greater demand than ever.

At the new Crankshaft Press Shop of

Copyrighted material



HOW STEEL BILLETS PROGRESS from the storage yard until they are shipped out of the Dodge Forge Plant as finished crankshaft forgings is depicted here and on the two following pages.

the Dodge Forge Plant in Detroit, crankshafts are turned out at two to three times the previous rate. Better crankshafts, too, for human error is minimized.

Heart of the new process is the giant 6,000-ton forging press, which replaces the steam hammer—the troublesome unit normally used for forging "cranks."

Second major element is a rotary furnace which automatically receives, heats and discharges up to 300 an hour of the metal bars, or billets, from which the crankshafts are forged. Heat-treating and tempering furnaces form the third big unit in this modern miracle system.

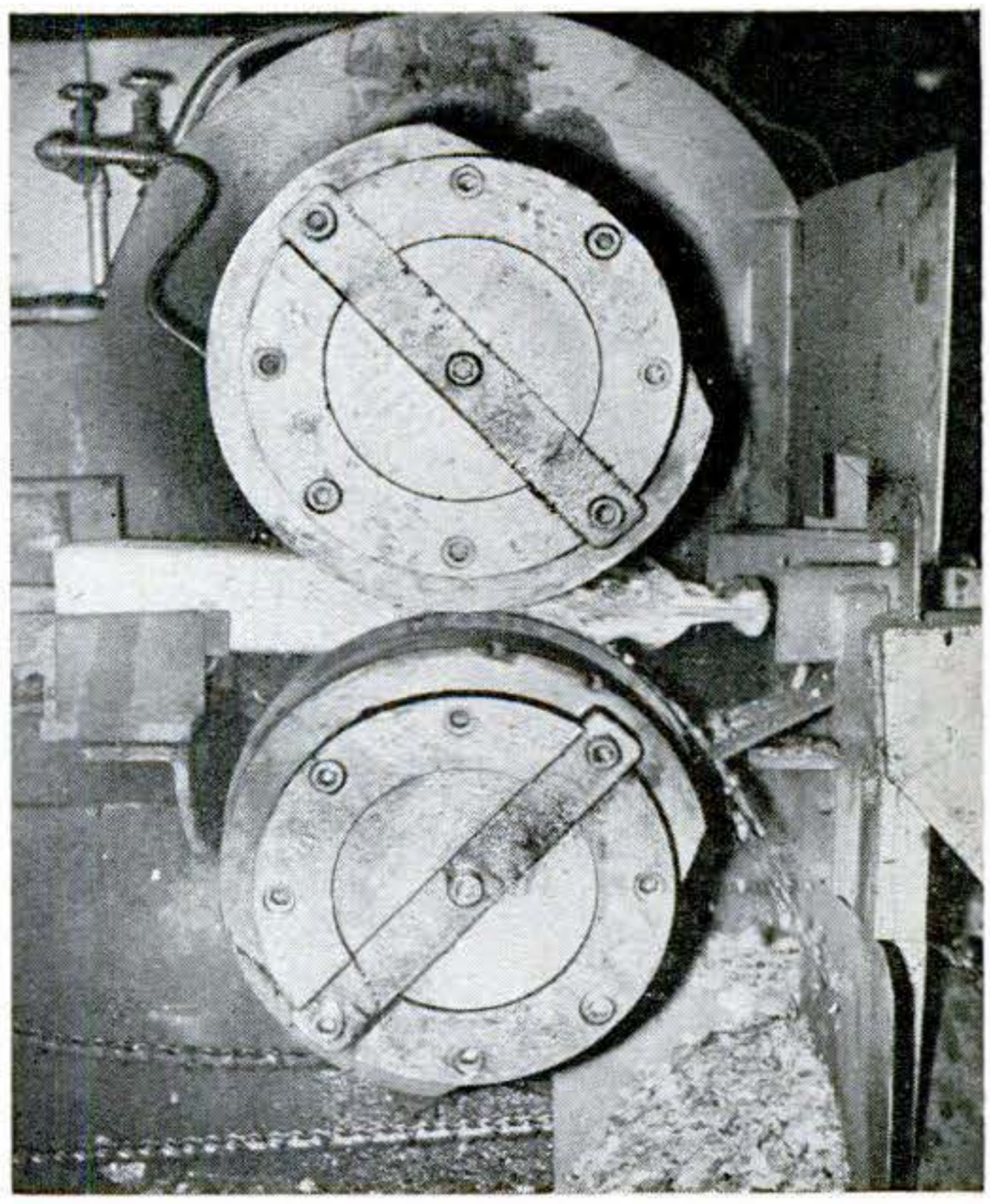
Presses Are Quiet

Going into the new shop from an adjoining building where hammers are pounding is like walking suddenly into quiet sunshine from a thunderstorm.

At one end of the 462- by 150-foot plant, where the business of making a crankshaft begins, 20-foot billets move smoothly by magnetic crane from the yard to a rack in the plant wall. A hydraulic cylinder nudges them one by one into a furnace for pre-warming at 400°.

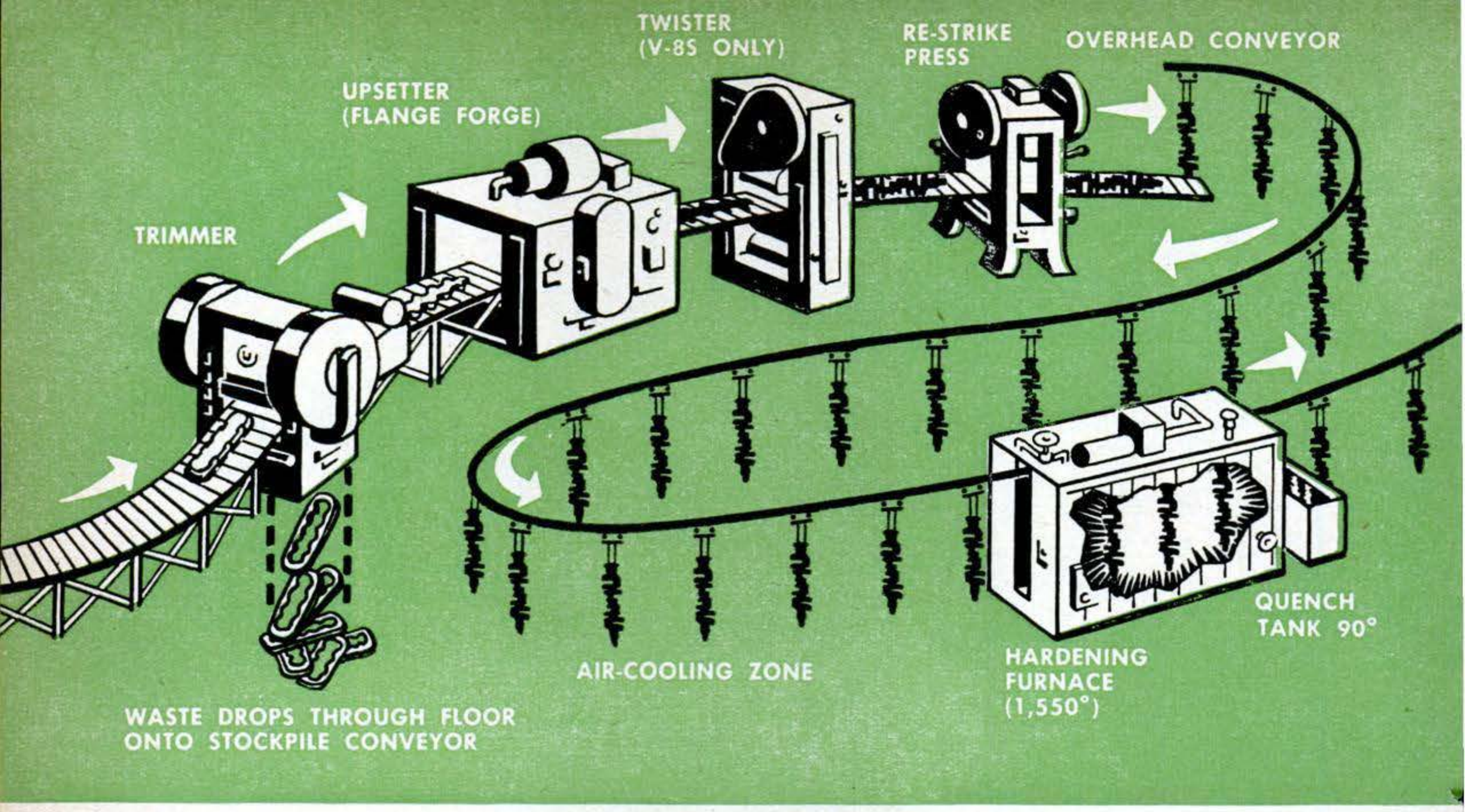
Dumped from the warmer, the billets ride a conveyor into a shear. As each billet touches a trip, a 1,300-ton pressure knifes through the four-inch-square metal like a razor through filet mignon.

Automatically, as the billets reach a rotary furnace, a hydraulic jaw clamps



AT THE DODGE FORGE PLANT, a heated crankshaft billet passes through the reducer rolls that distribute the metal where it is needed for the press-forging operation that follows.

Copyrighted material



each piece, moves it through the open hearth and places it gently on the fire-brick floor. The jaw moves out for another bite and the 32-foot circular floor rotates to let another billet in.

You could get a man-size burn just standing too close to the two openings in the side of this huge, doughnut-like contraption—2,250° to 2,300° is the temperature inside. But it takes an hour for the billets to make the circuit and show up ripe at the second opening.

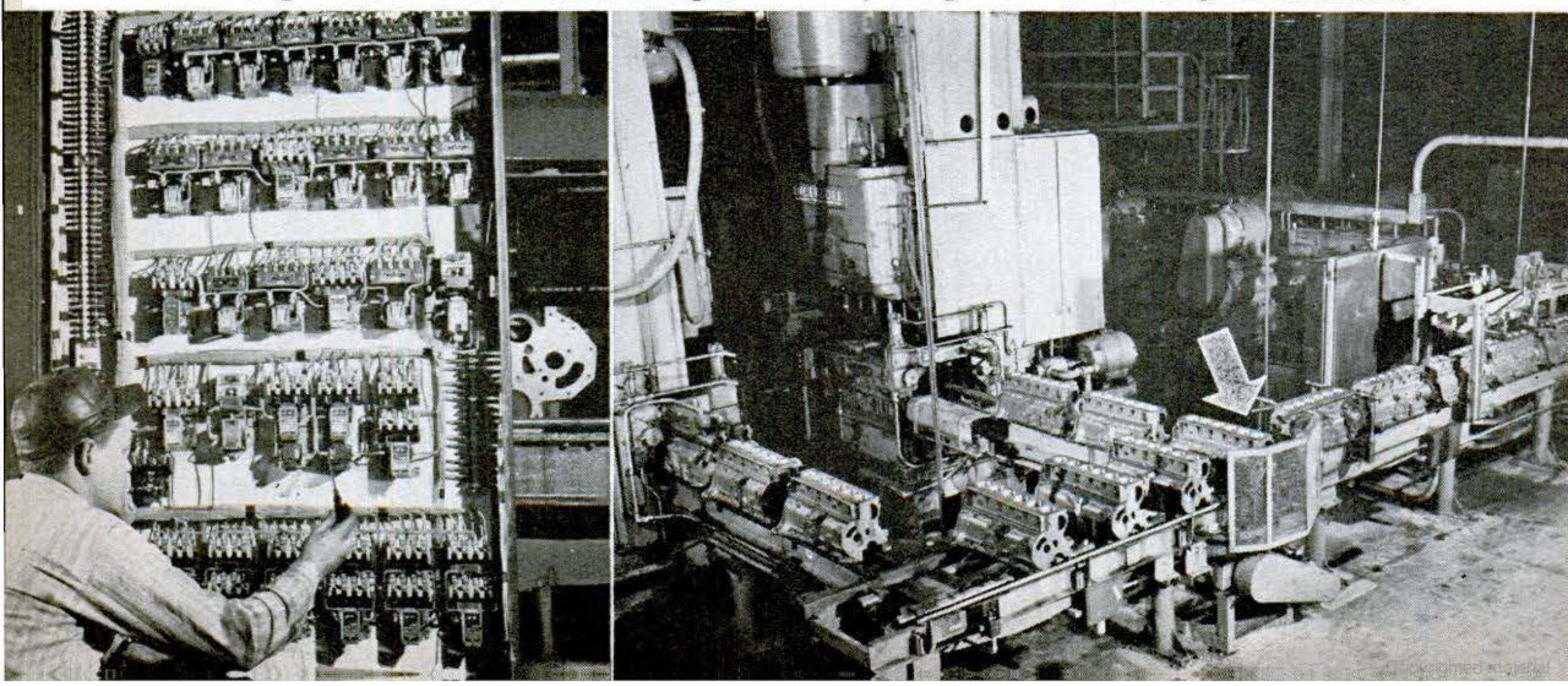
There another hydraulic jaw plucks them out and deposits them on a gravity slide. A turntable rotates them 90° and they're off through a de-scaler where four jets clean the billet with 1,500 to 2,000 pounds per square inch of water pressure.

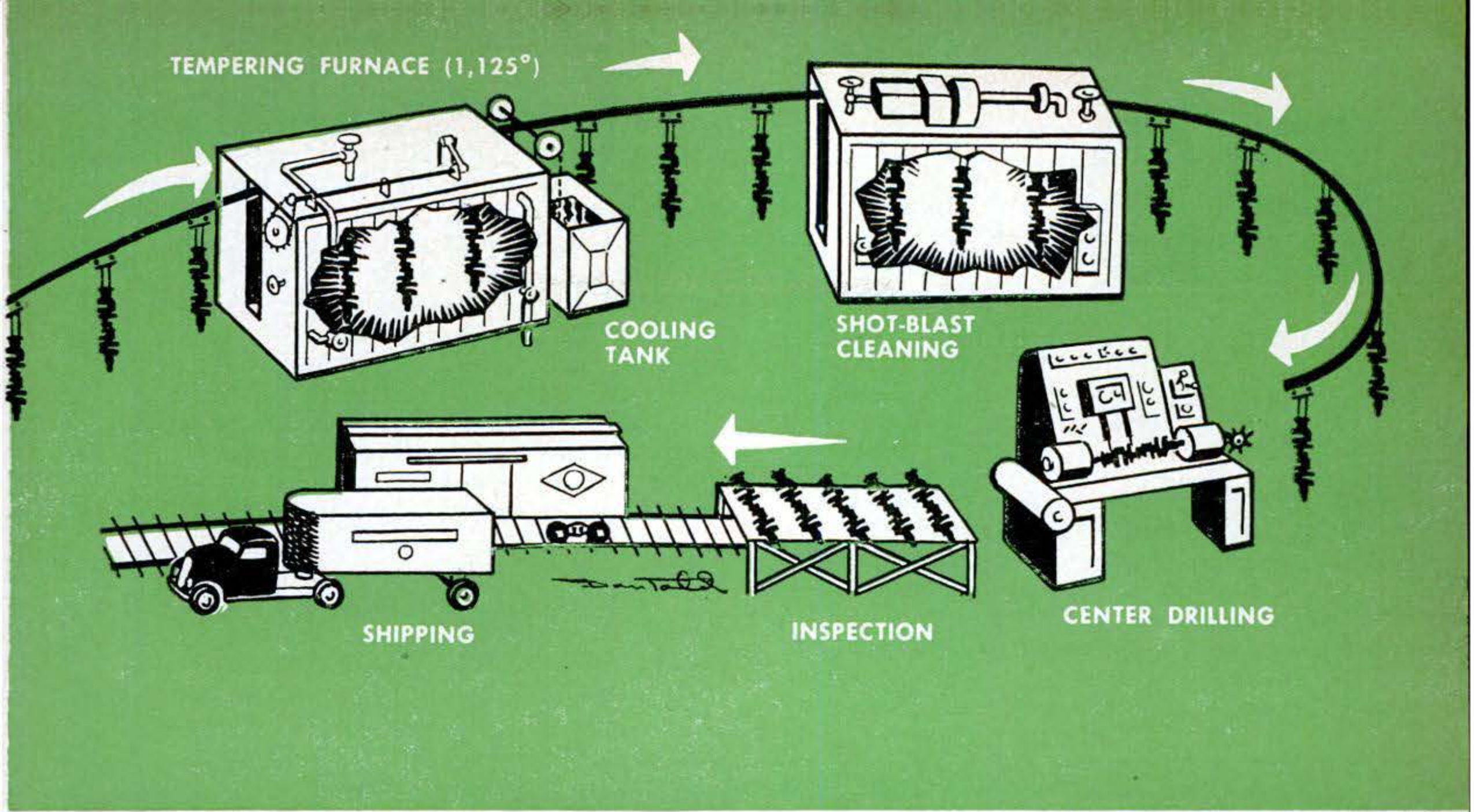
The pace has quickened now. In seconds, a billet navigates the de-scaler and strikes a trip which sends the first dies into action. These are in a reducer—two rolls that crush the hot billet between them to distribute the steel into the rough positions needed for forging.

The crankshaft-to-be shoots through the roll dies at high speed and comes

FORTY "ELECTRIC BRAINS" like the one shown below, all interrelated, direct the automated lines that machine and process engine blocks and other parts at Ford's new Cleveland plant.

PARADE OF BLOCKS, en route from one machine to another, marches along a broadside shuttle to automatic turntable (arrow) where they are positioned for lengthwise shuttle.





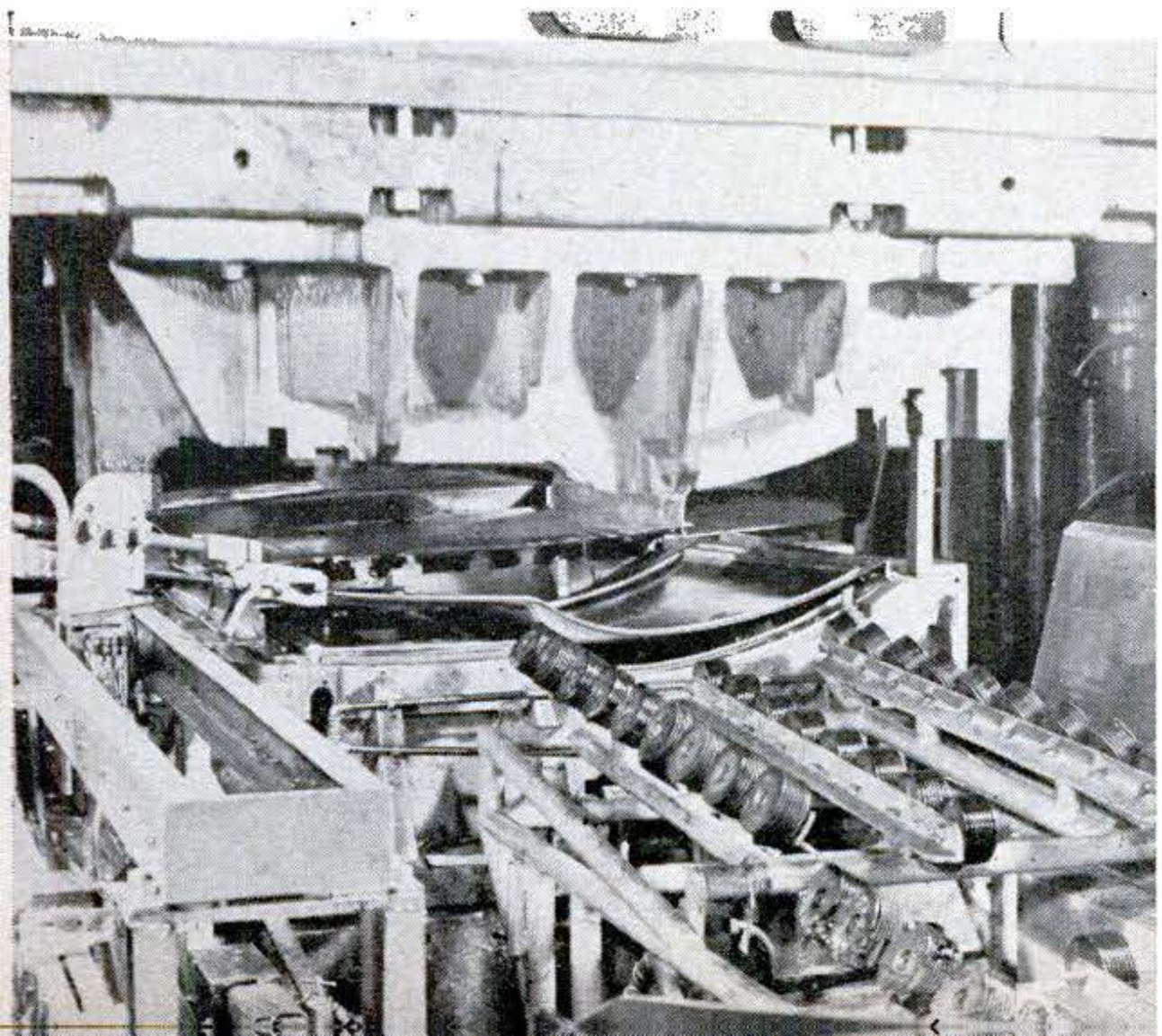
face to face with its first electric eye. The eye winks and into action goes an air-driven piston. The billet flips end for end and is ready for the press.

Up to this point, no man has done anything but watch the work.

Twelve Million Pounds of Pressure

Now a press operator tongs the billet into the first forging die. A touch on the foot button and 6,000 tons of pressure descend and rise. Six thousand tons—but it might be a rubber stamp for all the jar you feel. The steel flashes briefly into flame, then is tonged into the second die for the strike on the other side.

AUTOMATIC FEEDING and extraction of body parts is a feature of Ford's Buffalo stamping plant. Here a mechanical hand (left corner of press) pulls a rear-door panel out of the die.



After the second strike, the operator slides the forging to a conveyor at the opposite side of the die. It rides to a smaller trim press, where another worker jogs it into the trim die which shears off the ragged ruffle of waste around the edges. Waste goes through an opening in the floor. The crankshaft is tonged to an overhead trolley and placed, still red-hot, in an upsetter machine that flattens one end of the crank into the flange which will eventually link the shaft to a flywheel. A trolley carries the shaft to still another press for a re-strike to make certain of correct alignment.

Now the shaft is ready for heat-treating. It is placed in a rack, picked up by an overhead conveyor and moved through an air-cooling zone to the hardening furnace. Hanging four to a carrier, crankshafts enter the furnace at three-minute intervals on a monorail. One hundred minutes later, on the nose, they emerge from the 1,550° heat and are plunged automatically into a quench tank.

Water, held at a constant 90°, circulates around the cranks for 70 seconds. An elevator lifts the carrier back to the

[Continued on page 258]

Copyrighted material

P.S.

Last minute news & notes...

AN ANTI-MALARIA DRUG more powerful than any other known--including chloroquine, currently used in Korea--is reported by U. S. Public Health Service experts. The new lifesaver is pyrimethamine, called Daraprim by its maker, Burroughs Wellcome and Co.

OUR SOLAR SYSTEM has a newly discovered member--an additional moon circling the largest planet, Jupiter. This makes 12 moons for Jupiter. The latest is estimated to be a tiny satellite only 14 miles in diameter.

A RECORD STORE OF THE FUTURE may work like an Automat restaurant. You'd bring in a reel of blank or used sound tape, place it in a machine, deposit a coin,and have the latest song hits transcribed upon it, predict physicists of Armour Research Foundation. When you tired of them, you'd return with the reel and have the old tunes erased and newer ones substituted in the same way.

HELICOPTERS, already used successfully for locating whales, have now been armed for the kill. They will fire a rocket missile that dispatches the whale and then explodes a gas bomb to keep it afloat until a boat gets there. Norwegian whalers are currently trying out the innovation.

BIGGEST SINGLE BLOCK OF POWER ever supplied by the electric industry, 2,200,000 kilowatts, will be used by the AEC's new gaseous-diffusion plant near Portsmouth, Ohio, for making uranium 235.

WORMS NOW TRAVEL BY AIR from Nova Scotia to the U. S. In season, more than 100,000 blood worms from tidal mudbeds are imported monthly for fishing bait.

THE BIBLICAL STORY OF CREATION has new and striking scientific evidence on its side, reports Prof. Edward McCrady of the University of the South. Modern study indicates that all known elements in the universe came into existence practically at once--within half an hour or so. Before that time, there could have been no chemical elements at all. Dating studies, based on the radioactive decay of uranium,fix the date of that awesome moment of creation as about five billion years ago.

A "JET CARPET," developed in England by Shell Petroleum, is reported to solve the urgent problem of protecting tar-covered surfaces at airports from the heat and blast of jet-plane exhausts.

FIFTY OLD FREIGHT CARS will be renovated daily, in assembly-line fashion, by a $12,000,000 Pennsylvania Railroad shop to be completed next year at Hollidaysburg, Pa. Moving along one of three lines in the half-mile-long shop, a worn and battered car will be repaired, sandblasted, repainted, dried by infrared lamps and sent on its way as good as new, all in a single day.

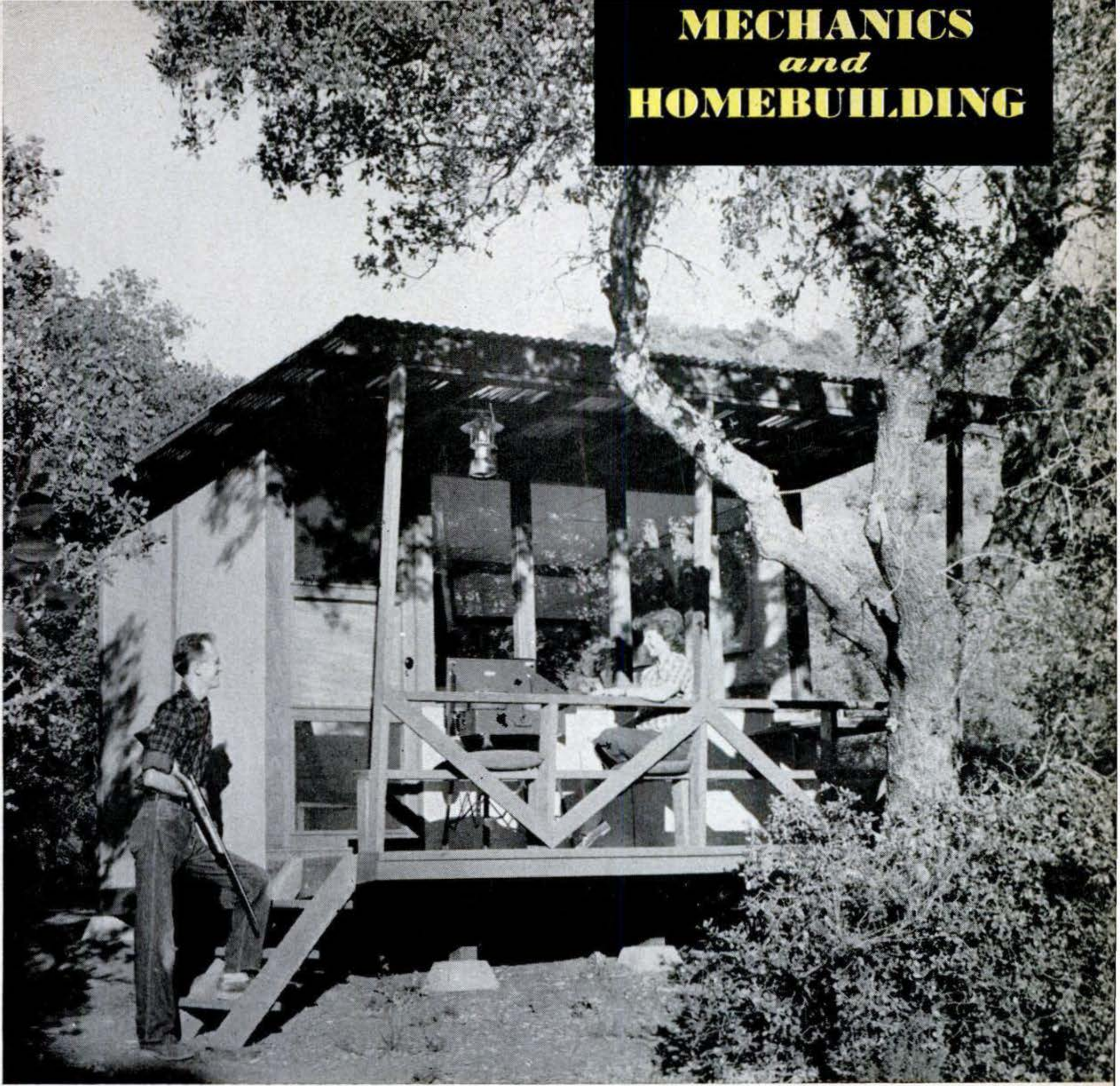
"ODOR-BLINDNESS" may be more common than color-blindness, according to Dr. R. Pantaleoni, perfume chemist.

AN ATOMIC-POWERED OIL TANKER of at least 10,000 tons is expected to attain the phenomenal speed of 30 to 40 knots. Norway and the Netherlands, co-sponsors of the Dutch-Norwegian Nuclear Research Institute near Oslo, plan to build the ship jointly and launch it within five years.

SEA LEVEL the world over is five inches higher than it was in 1895, says Dr. George F. Carter, Johns Hopkins University geographer. Because this is the tail end of a glacial period, polar ice is melting and filling up the oceans. Future harbor works should be planned for an expected sea-level rise of 24 inches within the next century, Dr. Carter advises.

The Editors

Copyrighted material



How to Build a Cabin for $200

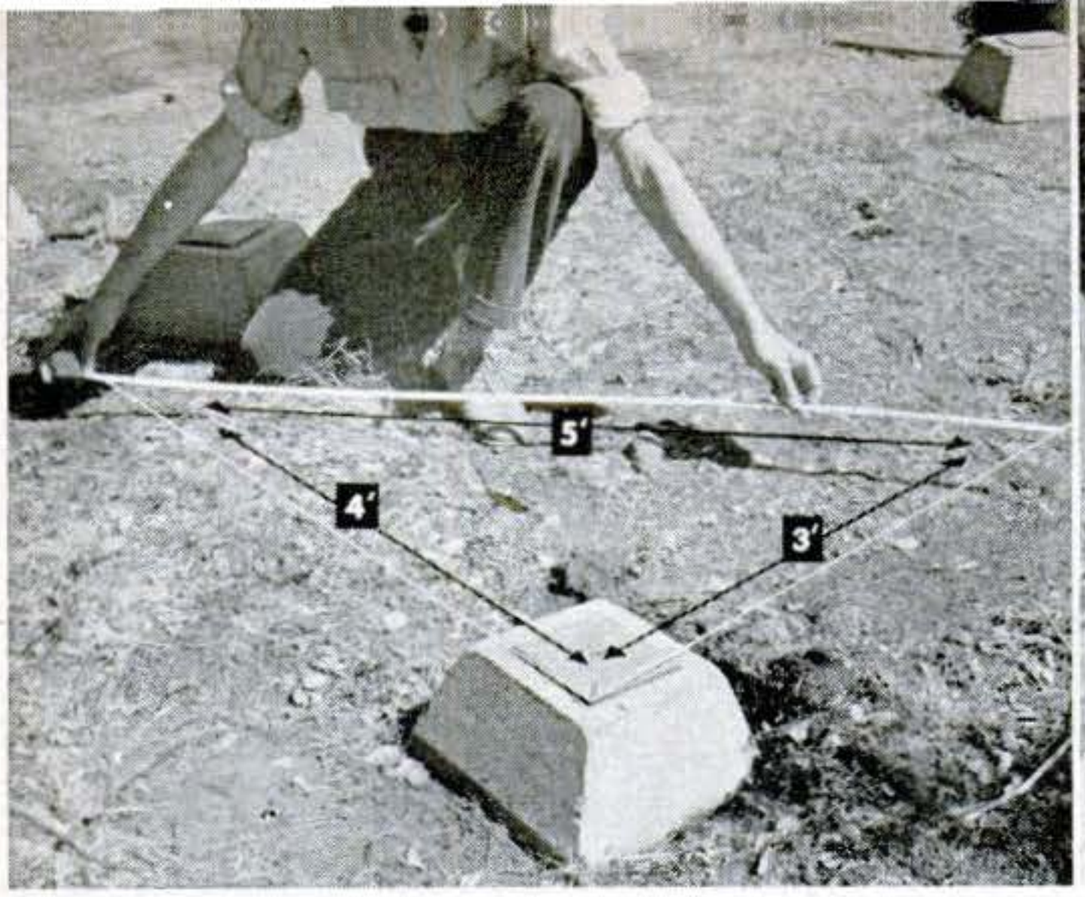
Vacations and lazy week ends aren't far away. This peanut-priced hideaway is fun to build, and you don't have to be a carpenter.

By Jerry Parker

WITH a burning desire for a snug little cabin all our own, we counted our spare cash. It came to $200. Three working week ends later we were broke but owned this cabin. We didn't knock ourselves out building it, either. It was hard work but the enjoyment we got out of it kept it from being hard labor.

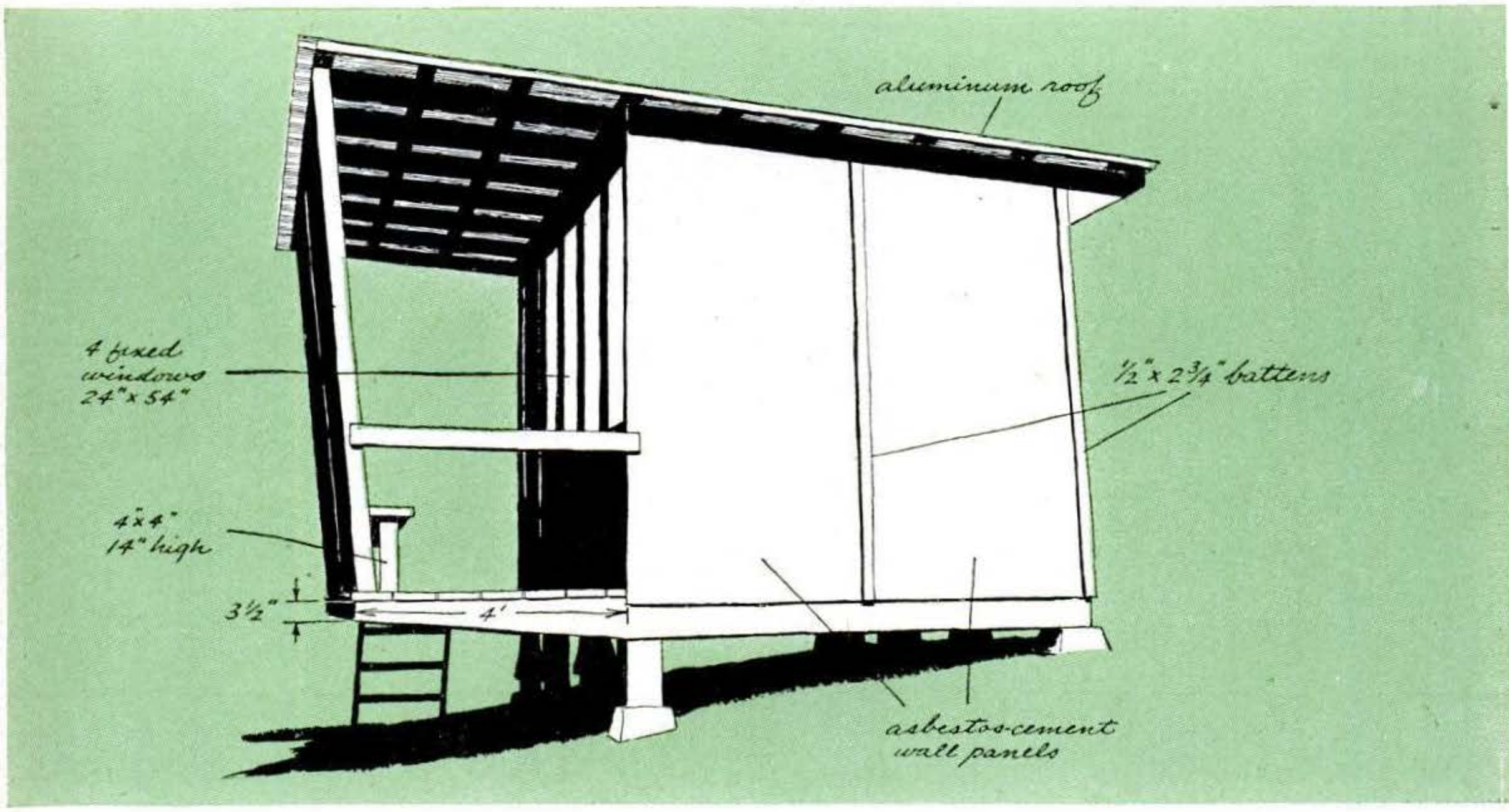
True, it's no place for throwing cocktail parties for 40 people—the floor area is only 12′ by 12′, and 4′ of that is porch. But it's a wonderful spot for the three of us to

Copyrighted material



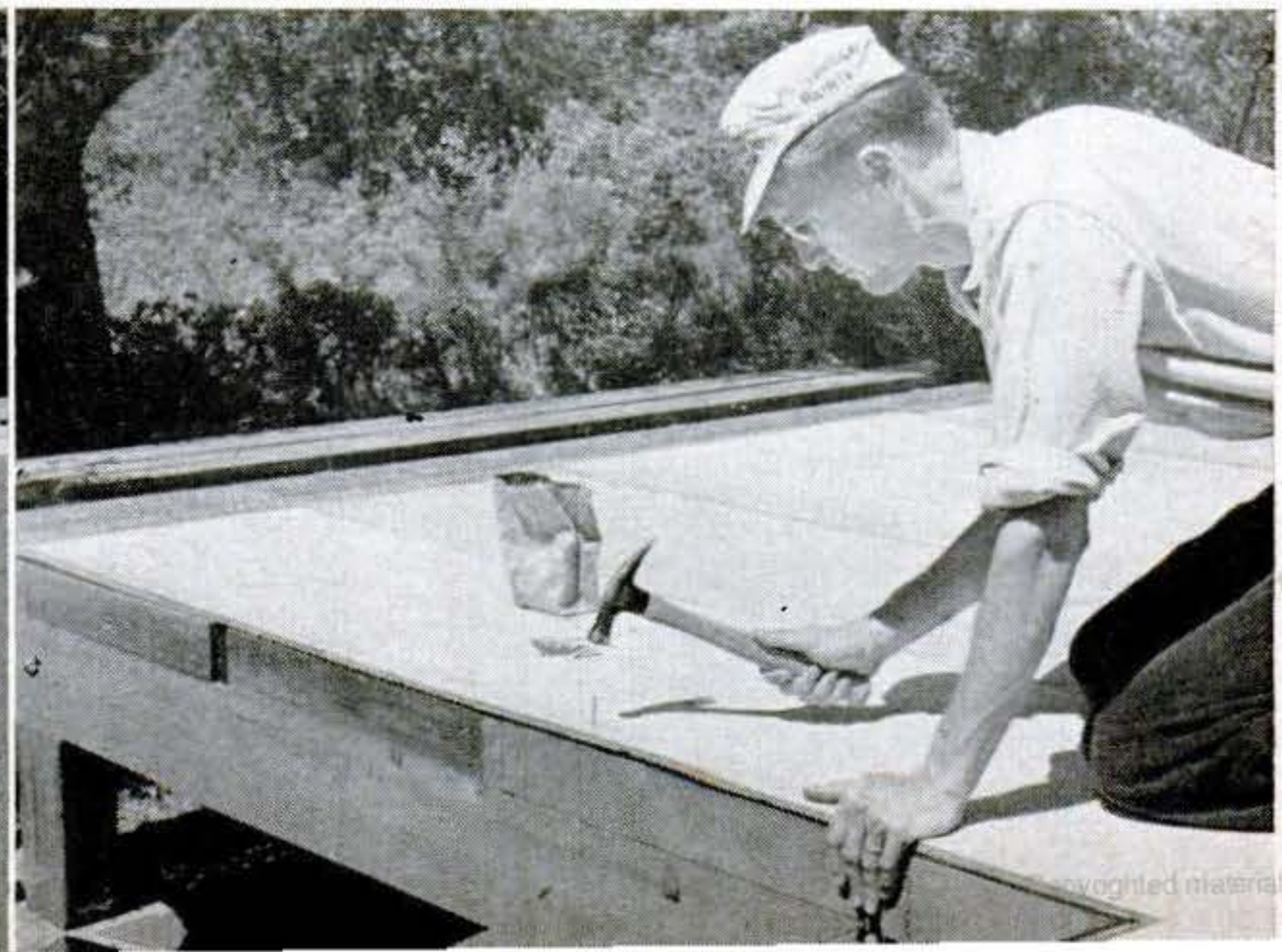
1 FOUNDATION is eight concrete piers. Corner ones were set out 8′ and 12′ apart and string run tightly between them. To square corners, string was marked 3′ and 4′ from each corner and piers adjusted until marks were 5′ apart. Then other piers were set.

2 POSTS were needed at front. The four girders were taper-sawed and rested on piers in back, held up level over front piers to determine post length. (Taper starts 4′ from front, runs to 3½″ width at front.) Scraps made diagonal braces for posts.



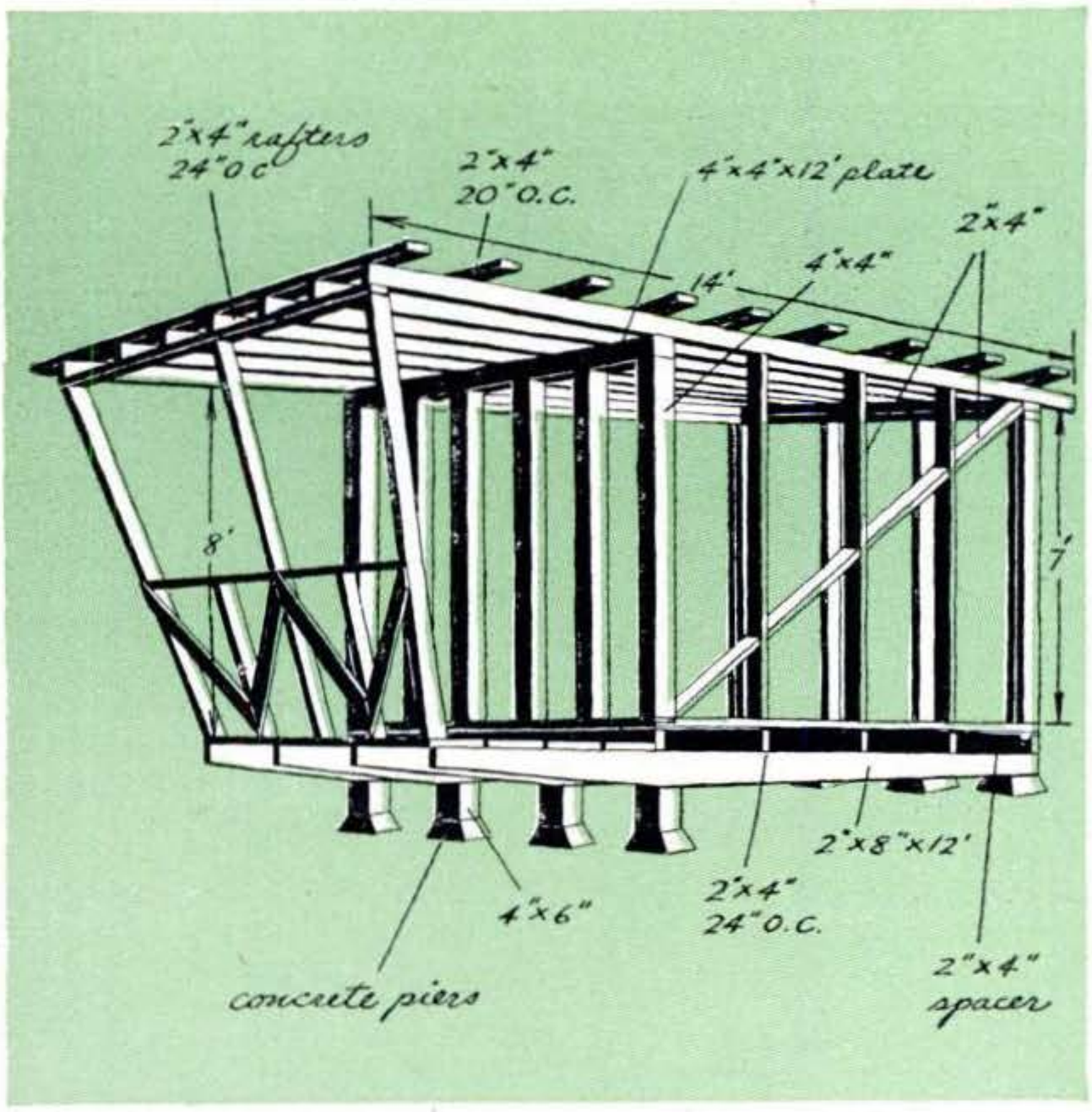
5 BUILDING PAPER was stapled over joists and spacers. Stapler speeds this job, and many lumberyards will rent you one by the day.

6 FLOORING is three 4′ by 8′ panels of ⅝″ plywood. Being reject grade, we got them for $14. Budget permitting, we'll add tiles.



3 HEADER is a 1″ by 8″ board that neatly boxed in the rear ends of the girders and also braced them. The front ends of the girders were boxed in by a one-by-four. Galvanized nails were used throughout the cabin to lessen the chance of rust stains developing.

4 FIVE JOISTS are 12′ two-by-fours on 24″ centers. Spacers between joists on girders are needed to support flooring solidly.



7 SOLE PLATES (sills) were nailed down in asphalt roof cement to seal out moisture. Diagonal measurements square corners.

loaf in on lazy week ends. If you like to hunt or fish, something like this would make an ideal base of operations. In the snow country it could make a fine ski hut. On a corner of your property it would serve nicely as a guest house, studio-workshop or a de luxe play house for the kids.

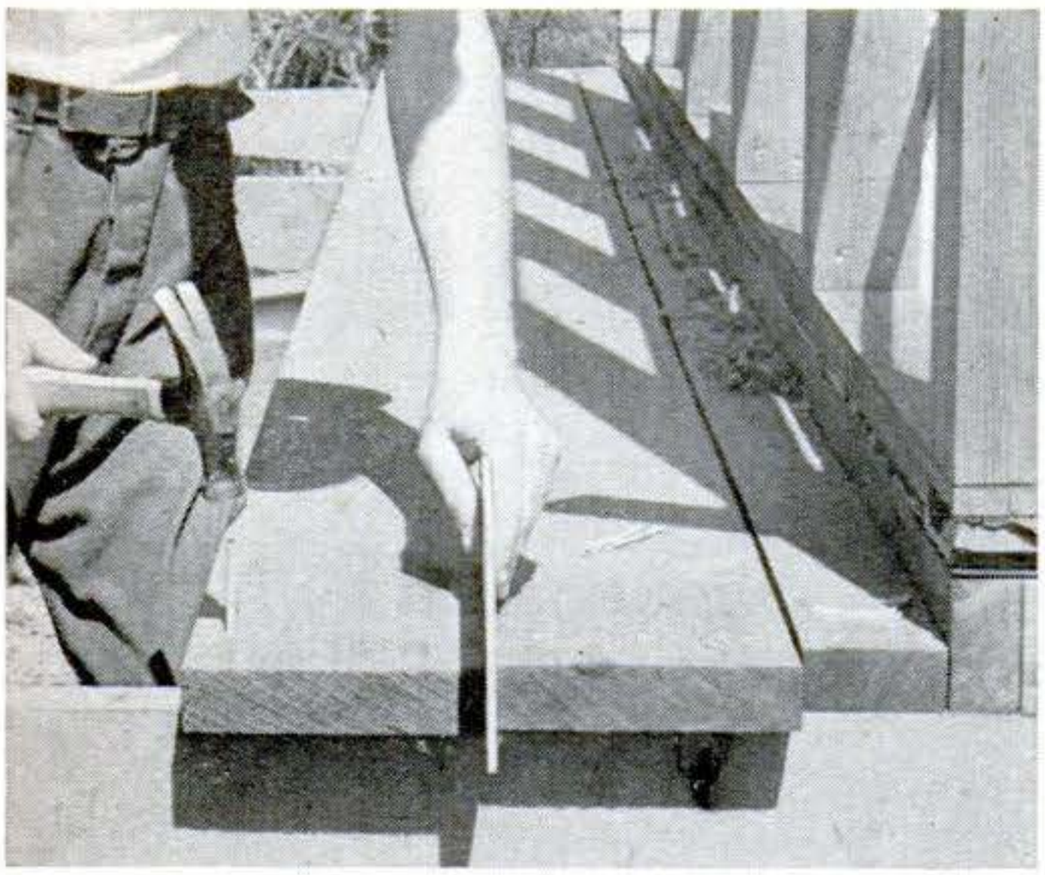
Nor do you have to be a carpenter to make one like it. The construction we used is simple, modern and straightforward: fir and redwood framing, asbestos siding, plywood flooring, aluminum roofing. To make building it easier, we put in fixed windows and louvers to take care of the ventilation. We made up the plans as we went, and they were the stub-pencil-on-the-back-of-an-envelope variety. If you can saw a board and drive a nail, you can build a cabin like this—and have fun doing it.

The $200 gave us the walls, roof and deck. We are slowly making interior improvements on a pay-as-we-go basis. Insulation, built-ins and a tile floor are on the docket next.

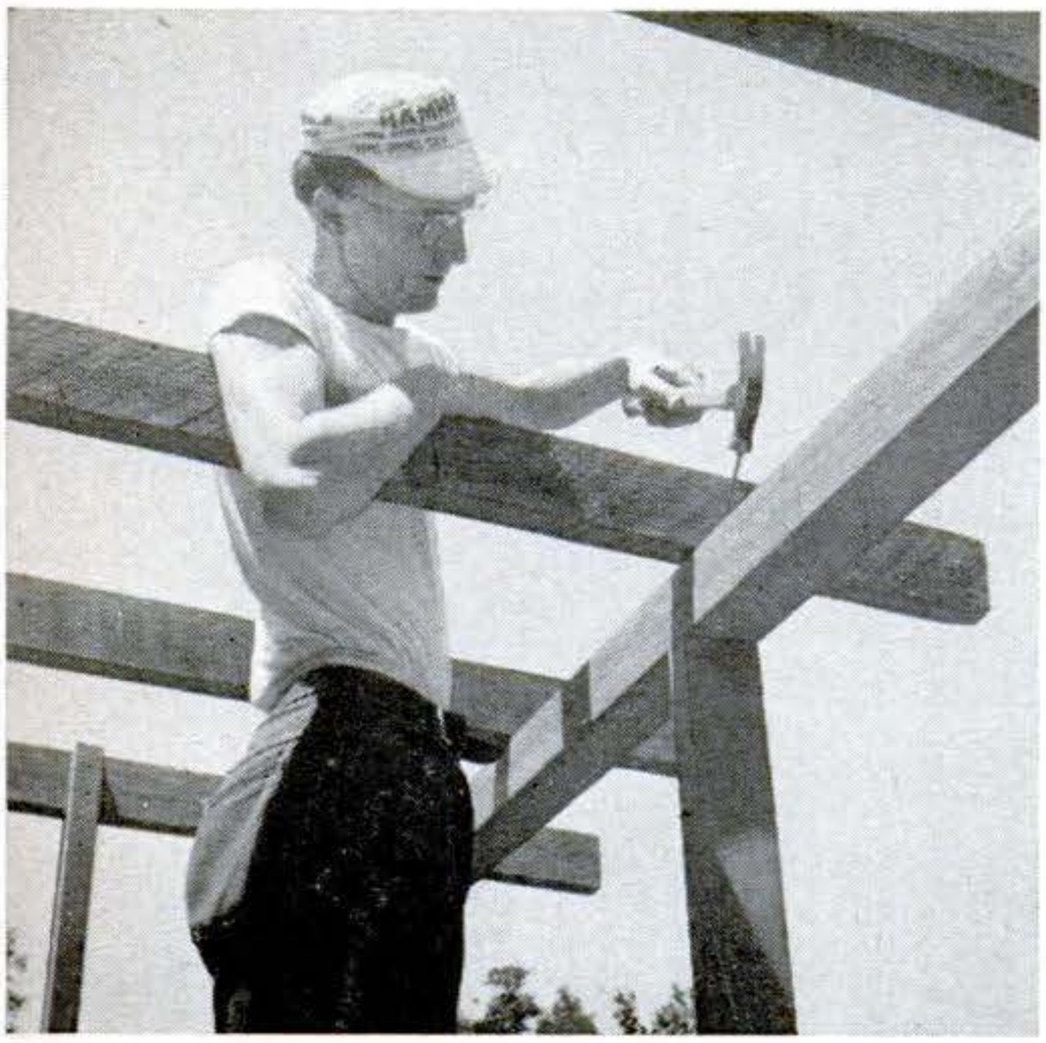
Our $200 went something like this:

8 FRONT STUDS, 8′ high, and plate are four-by-fours. They were rabbeted to take 24″ by 54″ sheets of double-strength glass.

9 CORNER STUDS at rear are 7′ doubled two-by-fours, as is plate. Other studs are two-by-fours. Temporary braces held corner.



10 PORCH FLOOR is 2″ by 8″ planks nailed to girders with galvanized spikes. Scrap of 3/16″ asbestos panel was used as a spacer.



11 RAFTERS are undressed two-by-fours on 24″ centers. I didn't notch rafters for plates; they seated well at 1′-in-14′ roof pitch.

$80 lumber
$35 asbestos-cement wall panels
$35 aluminum roof
$14 plywood floor
$20 window glass
$184 total

The remainder went for stain, hardware and paint.

Shopping pays. It's worth-while to shop around for lumber. Visit different lumberyards and compare their prices; scout out sources for secondhand lumber. We used redwood for studding and fir for roof boards. A better grade of redwood went into the deck and front 4′ by 4′ studs, where it shows. I like redwood because it's practically weatherproof, good-looking and easy to handle. If I'd used fir throughout, I probably could have built the cabin for $150 or less.

Watch for sales in building materials. Asbestos-cement panels usually cost about 15 cents a square foot but we've seen them offered at 12. Ordinarily aluminum roofing is around 20 cents a square foot but we bought ours at 14.

Don't be afraid to buy cheap, green lumber. Some lumber dealers sneer at the low-cost grades and call it chicken-coop stuff. If you're worried about shrinkage (we weren't, particularly), you can always stack your lumber for air drying and let it season a few months.

How big? If you are working to a tight budget, don't forget that space costs money and work. Our 8′ by 12′ inside area may sound like close quarters, but our family of three finds it a comfortable retreat. The extra 4′ added by the cantilevered deck, which is swept by breezes and shaded by the 5′ overhang, helps out greatly. In the future we plan to screen it in for more sleeping space.

Being an amateur is a help rather than a handicap on a job like this, because you don't have set notions to discard or pro standards to keep up. If a wall isn't absolutely plumb or a corner exactly square, just keep mum about it. The cabin will still be stoutly built, weathertight and good-looking.

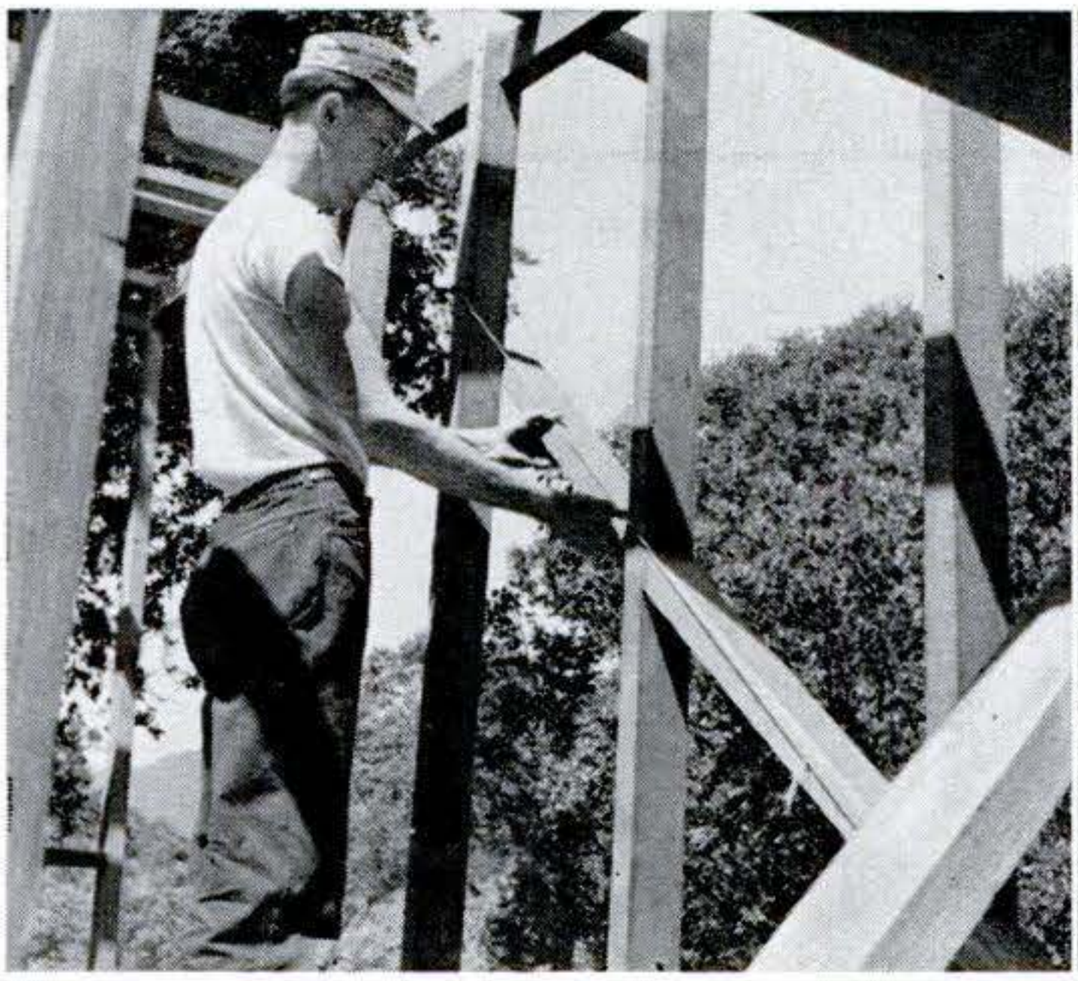
We enameled the asbestos wall panels, though they don't actually require it. The enamel, a green, synthetic type, was on sale for $5 a gallon at our local lumberyard. We figured at this price we couldn't go wrong. We stained all the exposed wood.

The joints between the asbestos panels were calked and covered with ½″ redwood

Copyrighted material

12 **SIDE STUDS** are two-by-fours on 24″ centers. Three were used on each side. They were notched into the outside rafters.

13 **ROOF BOARDS** are fir two-by-fours that rest flat across rafters on 20″ centers. Two-by-twos were nailed to roof-board ends.



14 **DIAGONAL BRACES** were nailed between studs in each side wall. Braces are scrap two-by-fours, run from sill to top corner.

15 **SIDING** is 4′ by 8′ asbestos-cement panels 3/16″ thick, trimmed to size by scoring along a straightedge and snapping off.

battens 2¾″ wide. We also battened the two back corners of the cabin so that the edges of the panels wouldn't get chipped.

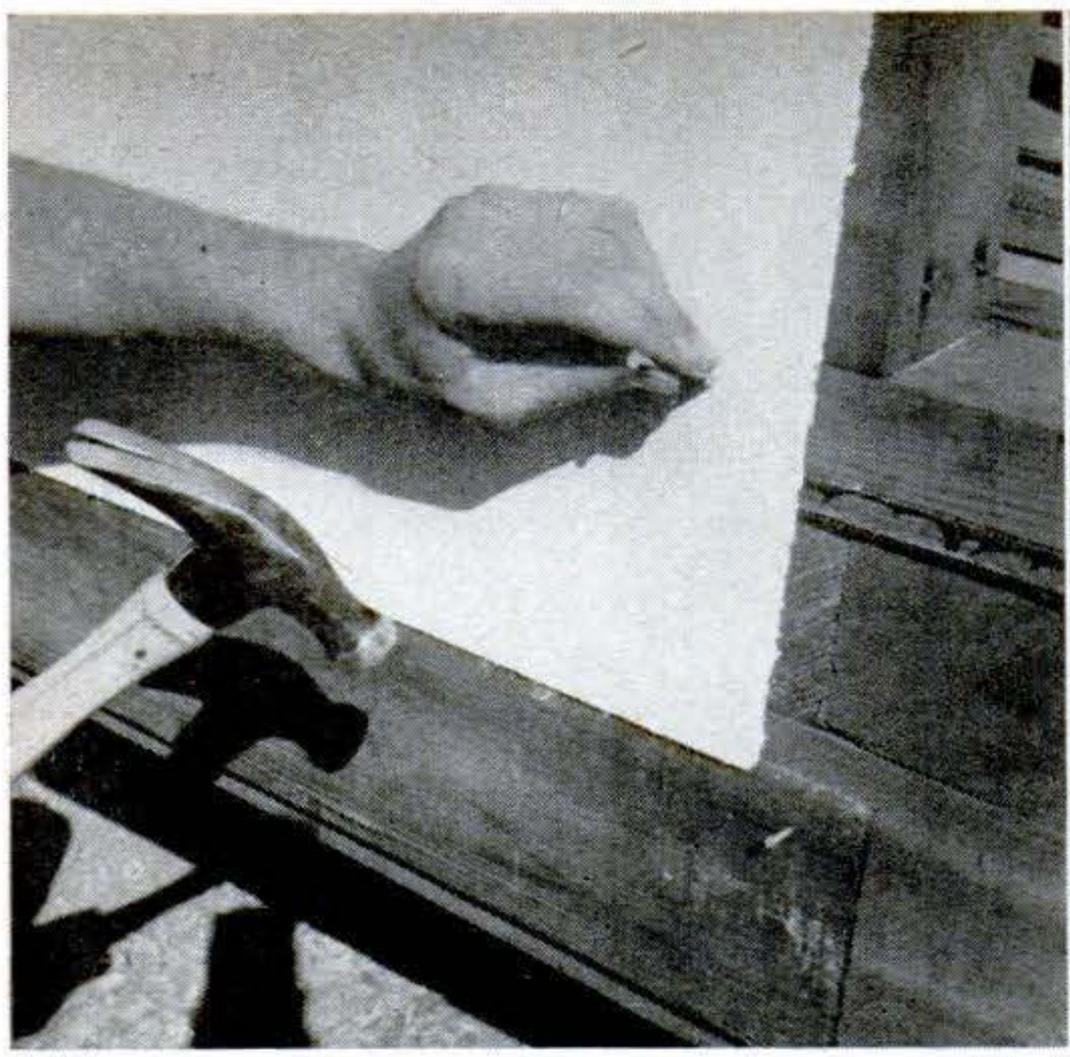
Big windows. For some reason, many cabins feature peephole windows. This doesn't make sense to me, so I put in four big fixed windows, each 24″ by 54″. They cover most of the south wall and almost make a solar house out of our unit. Ventilation is supplied by three hinged louvers at the top of the back wall and by the combination screen door.

When ideas occurred to us in building we incorporated them right on the spot. For instance, when the deck was finished there seemed a need for a bench, so we put a 2′ by 8′ plank along the rail and supported it with cutoffs from studding. A 24″ by 30″ table was hinged to the end rail. The table hangs out of the way when not in use. When up it's supported by a piece of closet rod.

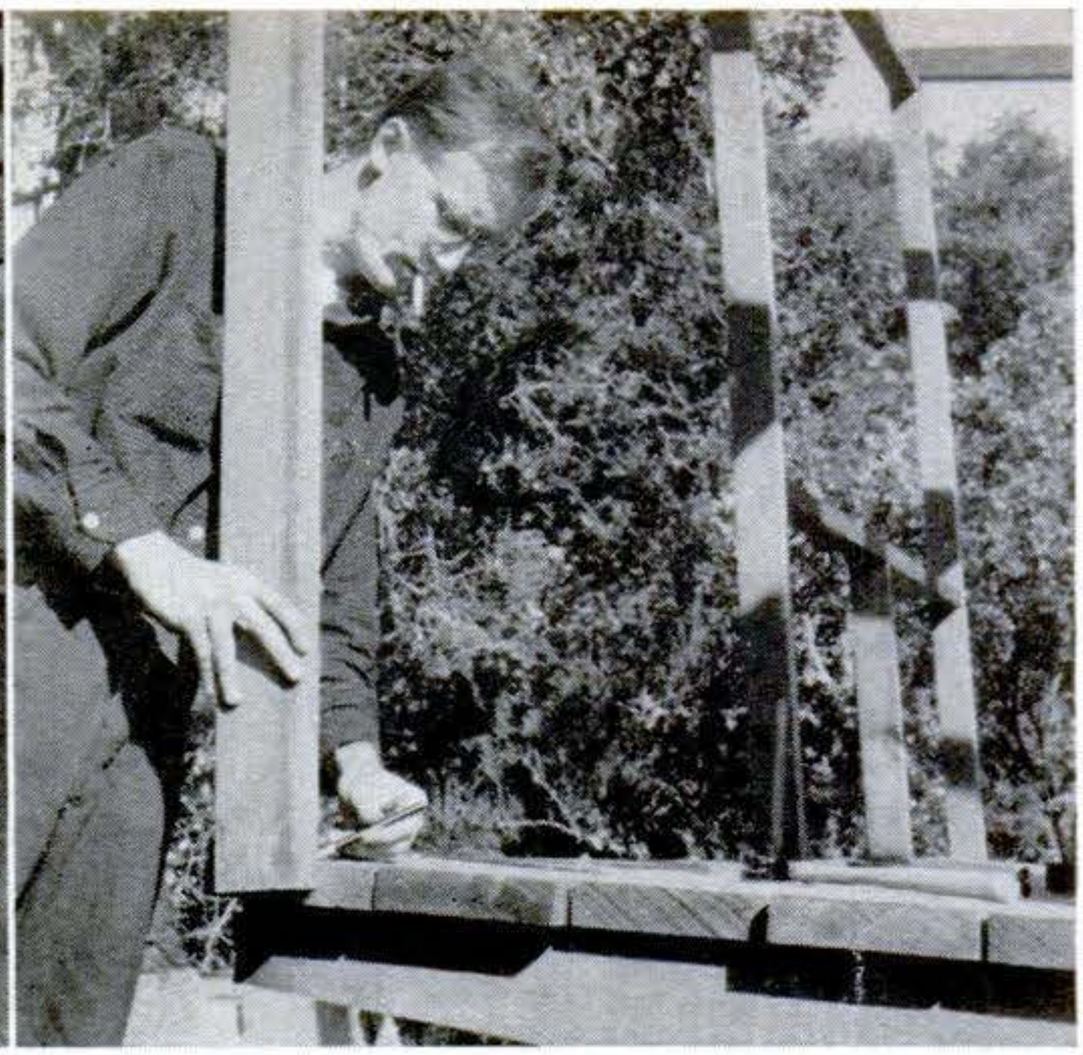
A bottle cap tacked to the underside of the table holds the rod firmly at the top and the bottom fits into a shallow hole drilled in the deck.

Building the cabin was mostly a hand operation. In the way of shopwork, the front 4″ by 4″ studs, plate and window sills were rabbeted to receive glass sheets. A three-panel door, which is screened on the front, has three removable squares of asbestos cement held in rabbets with turn buttons. We also made half-lapped 2″ by 2″ frames for the three back louvers. The louvers are 1′ high, approximately 4′ long and faced on the inside with asbestos cement. A power saw was used to cut battens out of some

Copyrighted material



16 PANELS were fastened with galvanized nails. Scrap of board tacked to frame of cabin held panel as it was nailed to studs.



17 POSTS AND RAILING of porch are two-by-fours. Posts slant out to meet roof. Angle at bottom of a post is being taken in photo.

½″ by 5½″ boards and to make ¾″-square window stops.

A cabin like this will give good service in any part of the country. Ours has been tested in California's torrid heat and heavy rains and passed these trials nicely. If you're building in heavy-snow country, some modification in line with local practice may be in order. If you are building in heavy-frost country, you had better sink the piers below the frost line or frost heaving may damage your cabin. (See PSM, April '51, p. 184, for details on casting frost-resistant piers.) You can also make your roof a solid deck with asphalt paper underneath the aluminum.

Maybe you'll want to increase the pitch of the roof. Ours slopes from a little over 8′ at front to 7′ at back. However, the kind of corrugated aluminum roofing we used will stand a load of 72 pounds per square foot on a 24″ span, so we'd build the same way even in the High Sierra.

Our cabin is heated by a tiny airtight stove. For lighting and cooking we depend on kerosene lamps and a small Coleman stove. Sketchy conveniences? We don't think so at all. We think our own cabin is out of this world—and it's a swell place to be. END

18 ROOF is corrugated aluminum. Sheets are 26″ wide and were lapped two corrugations at sides and 12″ at ends.

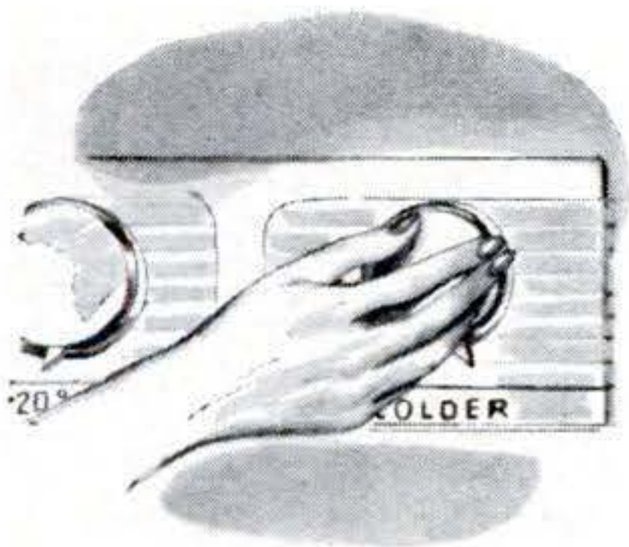
19 EXPOSED WOOD was stained a rich red. Table, hinged to rail, hangs down out of way. Scrap lumber supports bench.

Copyrighted material

Six Things You Can Do When a Home Freezer Quits

How to stop spoilage if the current or cooling unit should fail.

1 Keep freezer closed. Curiosity as to what's happening inside doesn't pay. Opening the lid or door for only a brief interval will speed up thawing sharply. If a storm is predicted and power failure is frequent in your community, it's good insurance to lower the temperature-control setting. Set it for 10° to 20° below 0°, which is the normal temperature. Food will then stay frozen longer without power. There is no danger so long as freezer is below 15°.



2 Transfer food to a commercial locker plant if it is operating and has space. To move food, wrap in newspapers and blankets or use insulated boxes.

3 Use dry ice if you can get it—and if locker space isn't available. In average freezer, 50 lb. keeps 15° temperature two days. Put heavy cardboard on food, dry ice on cardboard. Dairy or cold-storage plant may sell you the dry ice. Lacking dry ice, check temperature outdoors—it may be cold enough to store food there. Or maybe you can just open the window, cooling the entire room.

4 Keeping freezer full is sound operating procedure, even though you stand to lose more. In a fully loaded cabinet, food usually will stay frozen two days; in a cabinet with less than half a load, not more than a day. Department of Agriculture tests in a warm room show that in a well filled, well insulated freezer of more than 12-cubic-foot capacity, food will not begin to spoil within five days.

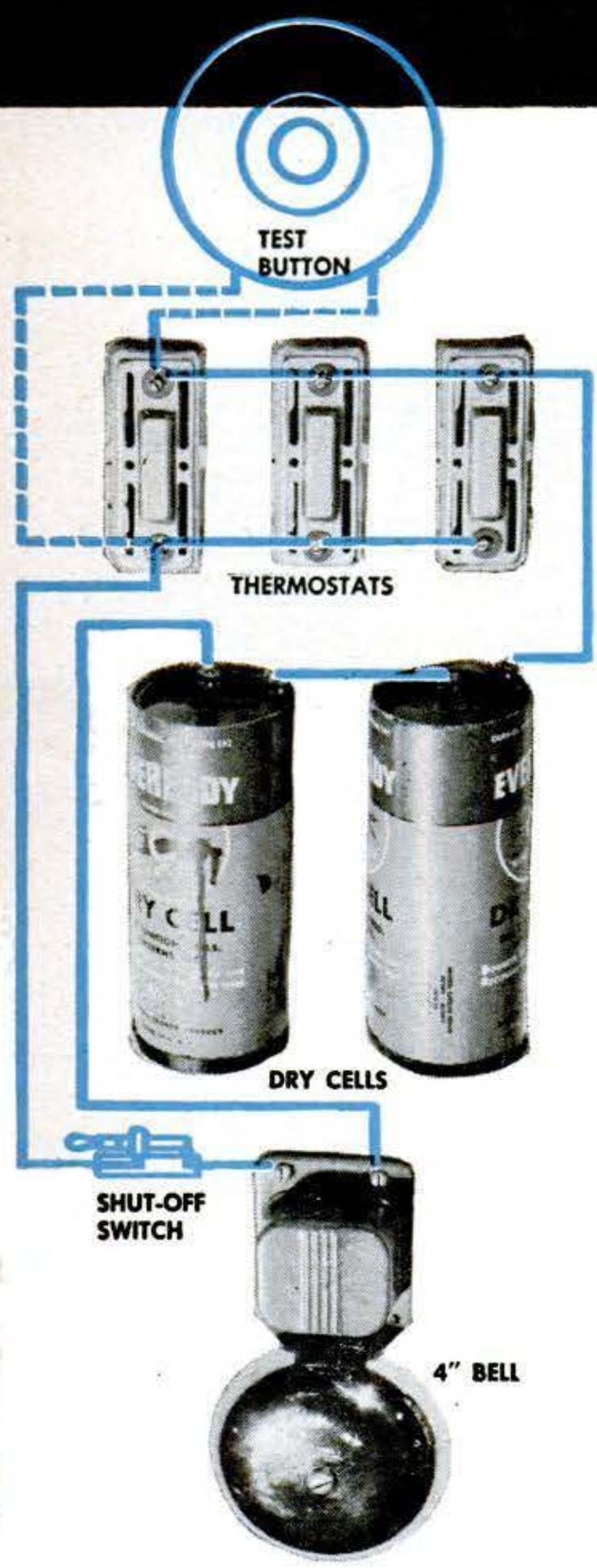
5 Covering the freezer with blankets or quilts will increase the insulation, but don't block the air vents. Crumpled newspaper or excelsior between the blankets and freezer will help.

6 Refreeze thawed food quickly when the emergency is over—*if you are sure it hasn't spoiled.* Taking the food to a commercial plant for refreezing is best. If you do it at home, move some colder packages to refrigerator while you refreeze the rest. For quickest freezing, pile packages so air can circulate around them.

Copyrighted material

Your Own Fire Alarm May Save Your Home

You needn't be an expert to install a system that will protect the lives under your roof.



BASIC CIRCUIT is this simple. Hook up as many thermostats as needed, keeping all runs of wire as short as you can. A test circuit (dotted) can be run from any one thermostat to a push button. The alarm should ring when the button is pressed. A switch near the bell is desirable to shut off the alarm once a thermostat has set it off.

By Harry Walton

THE odds against you go up every minute a fire is undiscovered. Early warning is one of the best personal fire-insurance policies you can buy.

You can sleep more soundly if a good fire-alarm system is standing guard. By rousing you in time, such a rig can make all the difference between incident and disaster. It can give the family time to get to safety, enable you to use what fire-fighting means are at hand, and give you a chance to call for help before things go too far. Such timely warning can be especially important if you live in the country at some distance from the nearest fire company. But in town or country, a working fire alarm can be a lifesaver.

Open versus closed systems. At its simplest, a fire-alarm circuit consists of a current source, one or more open thermostatic switches in various parts of the house, and an alarm bell, as shown at the left. Any abnormal rise in temperature closes the thermostatic switch, making the bell ring until current is shut off manually. Because all the thermostats are connected in the circuit in parallel, the heating of any one of them will sound the alarm.

A closed-circuit system has thermostats that normally remain in the closed or current-conducting condition, but open to break the circuit when heated. They are connected in series like the links of a chain, and current normally flows through all of them into a holding relay, which holds a separate bell circuit open against spring tension. Heating any one thermostat will break the relay circuit. The relay spring then closes the bell circuit and the alarm rings.

Such a closed-circuit system will give warning by ringing if a wire is broken, a thermostat connection is loose or the cutoff switch is left open. It will not warn of current failure unless the bell circuit has its own current source in the form of dry cells. A constant-duty transformer must be used for the thermostat circuit, because dry cells would quickly be exhausted.

Heat-sensitive elements. Thermostats for fire alarms can be bought ready-made at modest prices, and several are shown in the accompanying photos. You can make your own by using clothespins, bimetallic strips or parts of old

Copyrighted material

YOU CAN BUY THERMOSTATS like these, usually in sets with or without transformer and bell. The two at left above must be connected to an electric-bell circuit, but big unit at the right has a nonelectric mechanical bell.

THESE YOU CAN MAKE. Topmost unit is built around an auto-radiator thermostat. The center one makes use of a homemade bimetallic strip. Simplest is the clothespin type. Wax button softens when hot, lets contacts touch.

auto thermostats, and check them in the kitchen oven.

The simplest kind consists of a spring clothespin with a contact set in each jaw. The jaws are held apart by a bit of wax, which of course melts under heat, letting the contacts touch.

Candle wax can be used in cool locations, such as parts of the cellar distant from the furnace, but may give a false alarm during hot weather when used elsewhere. Sealing wax is more suitable. Still better is a bit cut from a fusible link. Such links are sold for use in automatic sprinkler systems.

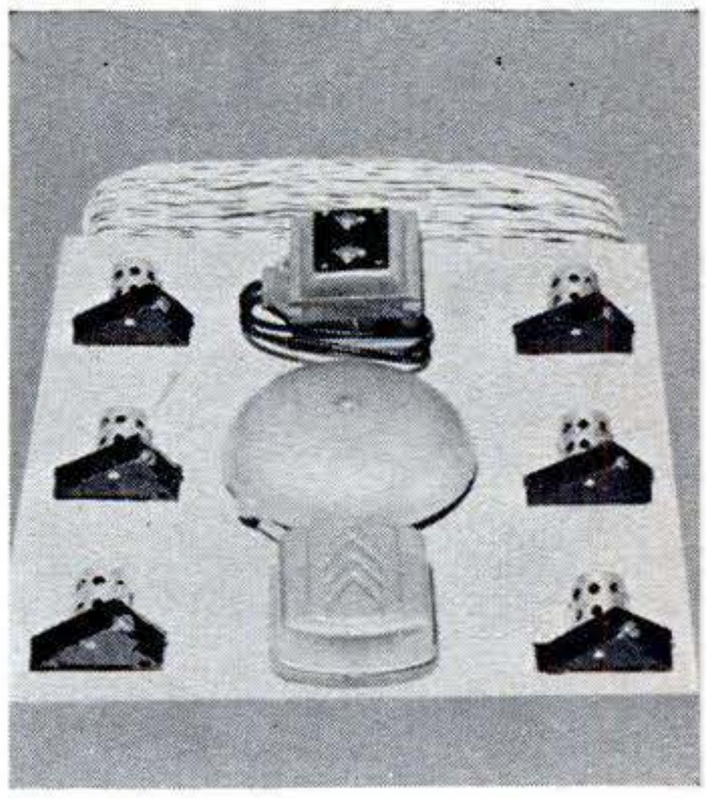
A good unit for the attic or other warm locations can be made from a bellows-type auto-radiator thermostat as shown in the photos. Another kind uses bimetallic strips cut from the spiral type of auto thermostats or made by riveting together a piece of steel and another of copper. This kind can be used for open or closed systems simply by locating the contact screw on the proper side of the bimetallic strip.

To check thermostats, wire one at a time in series with a dry cell and a flashlight bulb. Put the thermostat in the kitchen oven, turned on low, with a dependable thermometer alongside it. Adjust the thermostat so that the bulb lights (or goes out, if you're building a closed-circuit system) at about 20° above the prevailing summer temperature of the location where the unit is to be installed. Near the furnace or over a kitchen range a setting as high as 160° may be necessary to prevent false alarms.

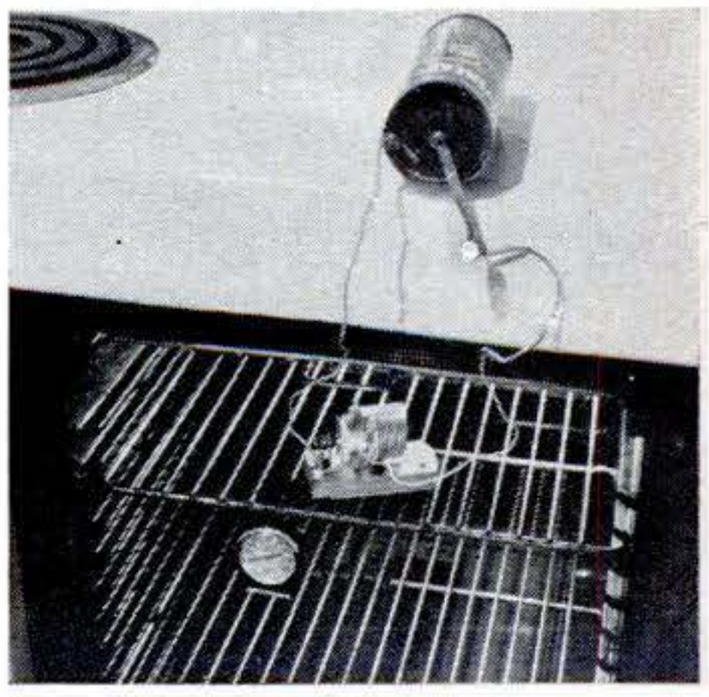
Current sources. The cheapest and most convenient power source is a bell transformer. Its disadvantage is that a power failure puts your fire alarm out of commission.

Dry cells are of course independent of power lines. Use two or three of the large No. 6 size, or a "hot shot" unit. Since they deteriorate in time, they should be replaced once a year to insure dependability.

Installing the system. Mount the alarm bell where it can be heard loudly enough in bedrooms to wake sleepers, and will be audible during the day everywhere in the house. The upstairs hallway is usually a good place. Thermostats should be located as high in the rooms as possible, at the head of cellar and hall stair wells, in the attic near the

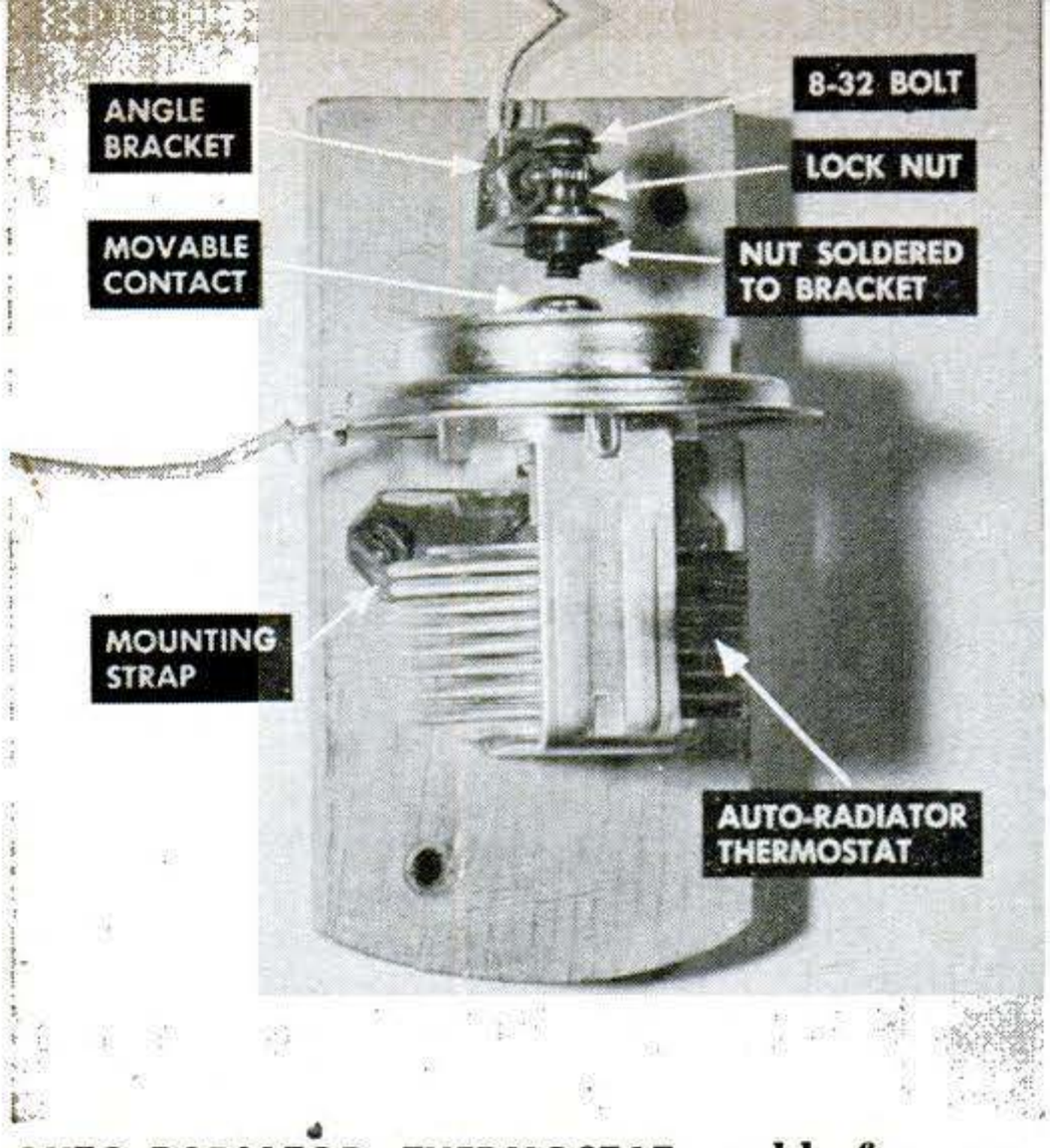


FIRE-ALARM KIT complete with transformer, gong and six thermostats sells for about $25 (Hal Golden, 30 Central Park So., N Y C 17). A similar five-thermostat and bell set, without transformer or wire, costs about $15 (Harmony Brass Co., Plano, Ill.)

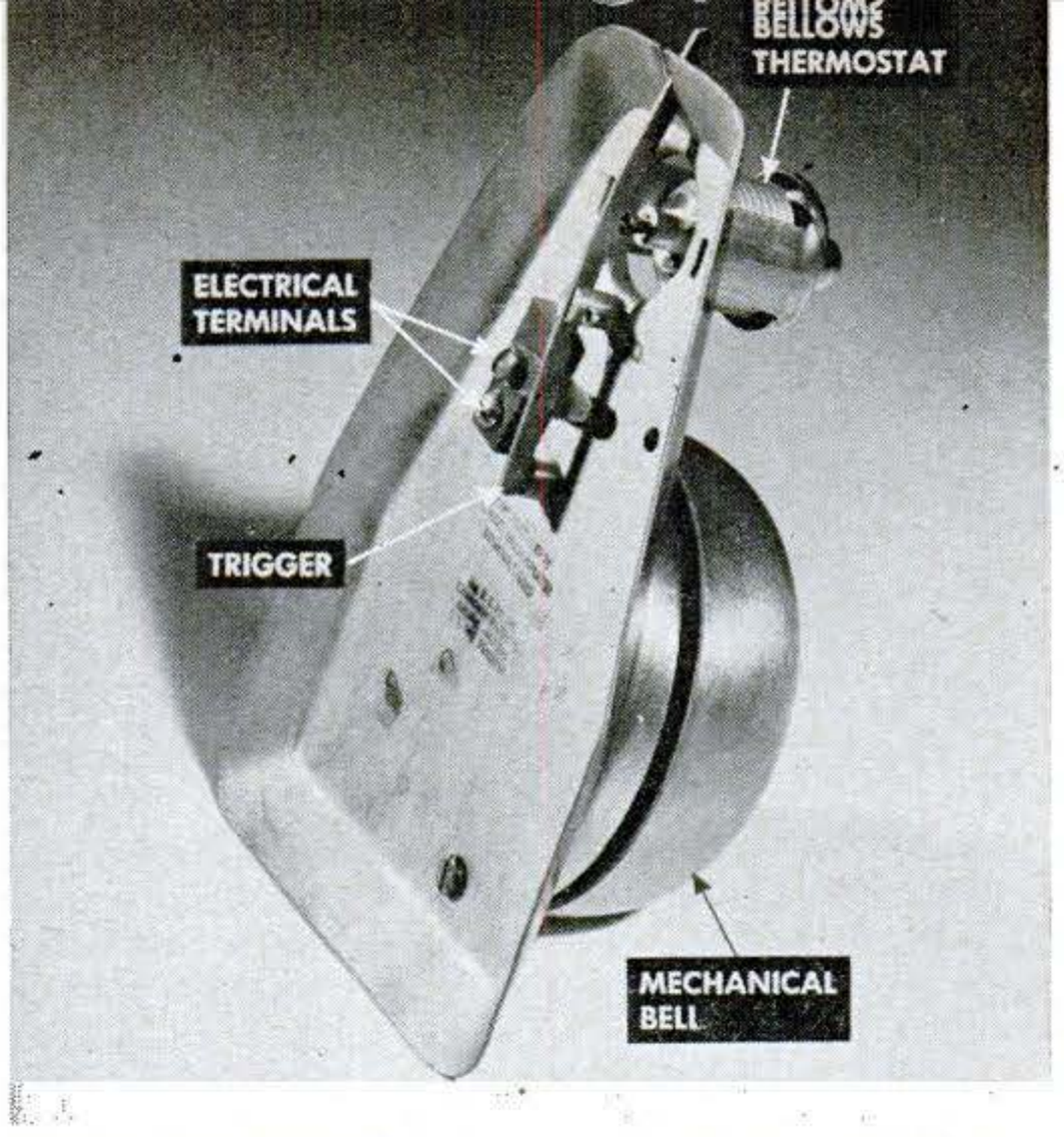


TEST HOMEMADE UNITS one at a time in the kitchen oven, using a reliable oven thermometer. Connected to a dry cell and a flashlight bulb, the thermostat should light up the bulb at 125° to 160°, depending on where you will use it.

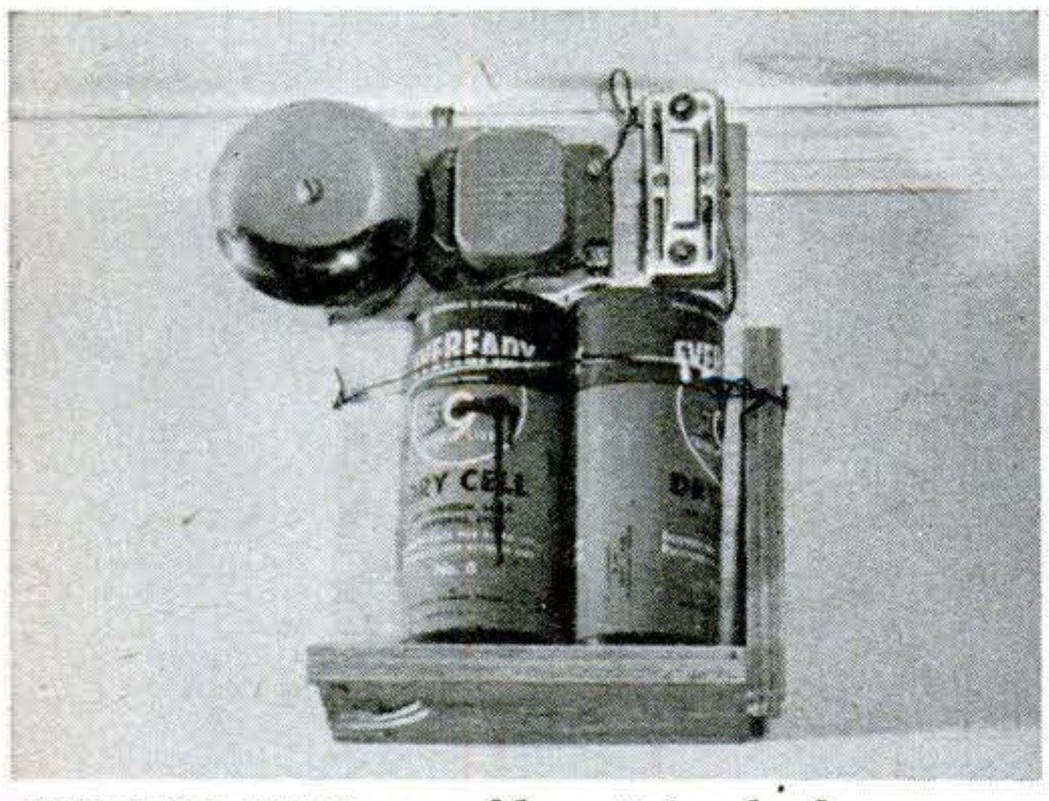
Copyrighted material



AUTO-RADIATOR THERMOSTAT, sold for use with alcohol antifreeze, opens at 153° and makes a good unit for the attic, over the furnace, other warm spots. Solder one wire to thermostat frame, one to contact bracket.



WIND-UP ALARM has mechanical bell that is tripped by bellows thermostat. This also closes a switch that can be connected to a distant electric bell. Made by Elmac Inc., Seymour, Conn., the unit retails at $7.50.

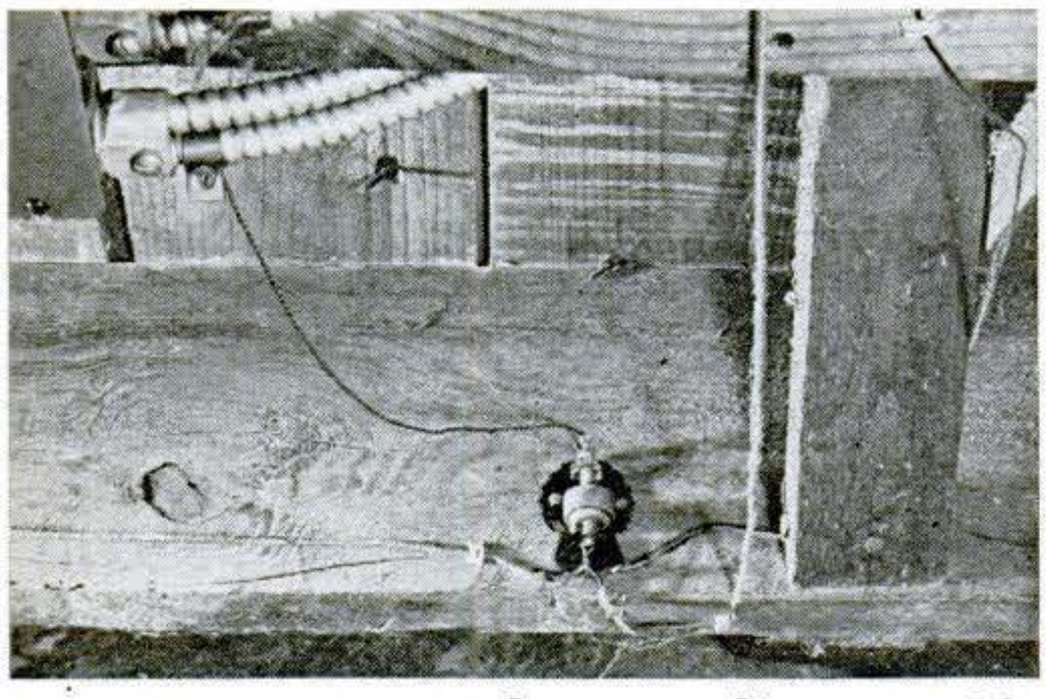


PORTABLE UNIT, a self-contained alarm, was assembled by writer for use near a temporary fire hazard. It hangs from ceiling molding, can be used near such risks as portable heaters, painting supplies or party decorations.

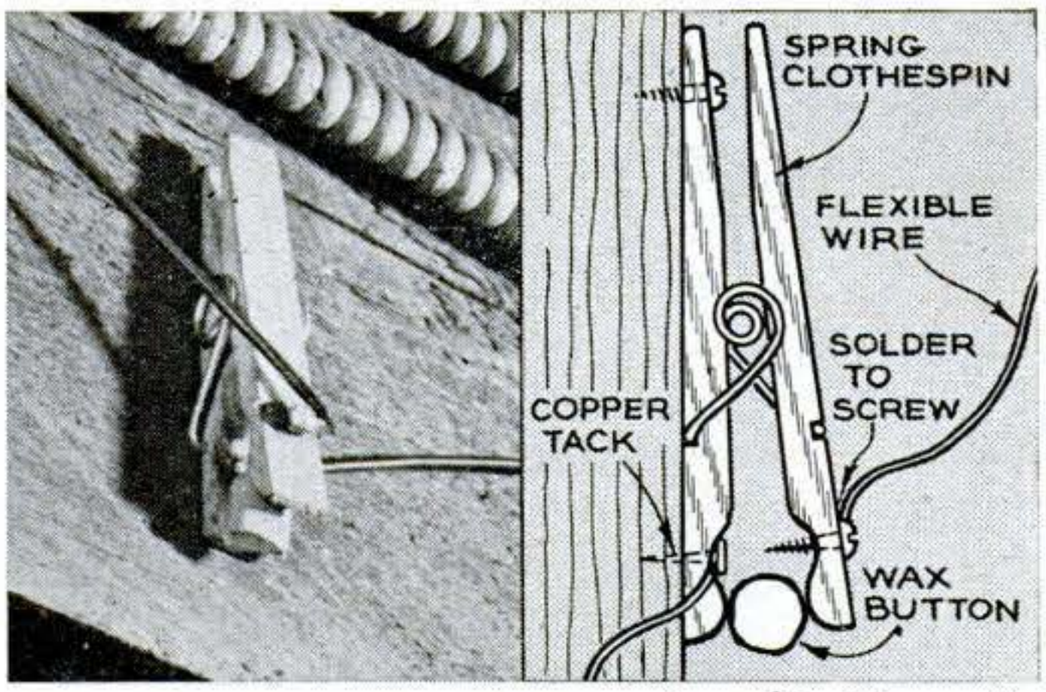
chimney, over the furnace, near the kitchen range and wherever an unusual fire hazard exists.

Plan your wiring on paper first, noting where you can most inconspicuously drill 3/16″ holes through walls and ceilings to pull the wires through. Use 18-gauge twisted

GOOD SPOT for a thermostat is at head of cellar steps, where heat from a basement fire would rise. Since furnace heat normally keeps this area warm (or even hot, if furnace runs for heating water in summer) a unit set at 150° may be used.

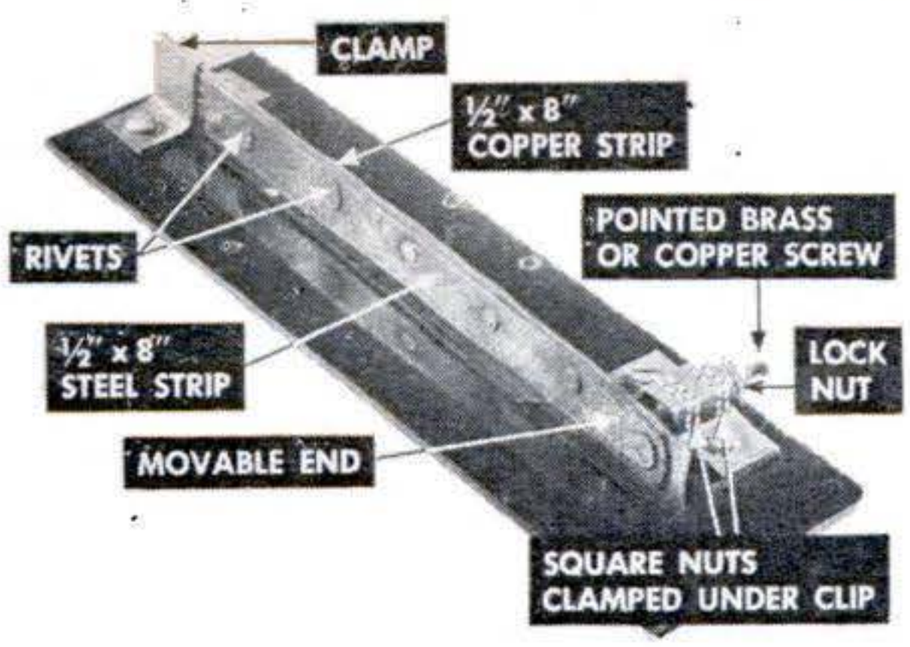


YOU CAN SAVE WIRE by grounding one side of thermostats to BX cable, pipes or the shells of electric fixtures, if yours is a battery system. This saves one wire, but isn't recommended if you use a transformer for power.

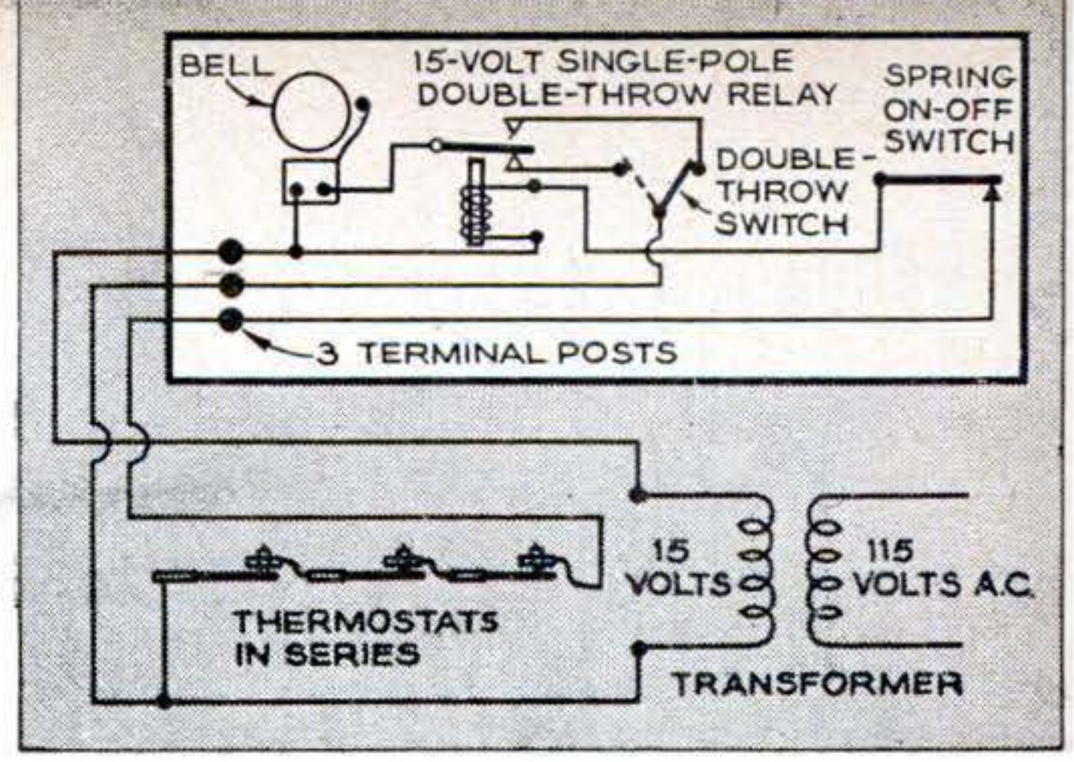


CLOTHESPIN HEAT DETECTOR is suitable only for cool locations. Be sure to mount it vertically so that melting wax won't foul the contacts. Turn in brass screw far enough to touch other contact well before jaws close.

Copyrighted material



BIMETALLIC STRIP will bend toward its steel side when heated. Join a copper and a steel strip with rivets spaced 1" apart. Mount firmly at one end on a nonconducting base and fix an adjustable screw in a bracket or clip near the other end. With the contact on the copper side as above, the circuit is normally closed, opening when heated, and unit is for use in a closed-circuit alarm system like that shown at the right. For an open-circuit system, mount the screw on the steel side, using a copper rivet in the strip as the moving contact. A bimetal strip cut from a spiral auto thermostat can be rigged the same way.

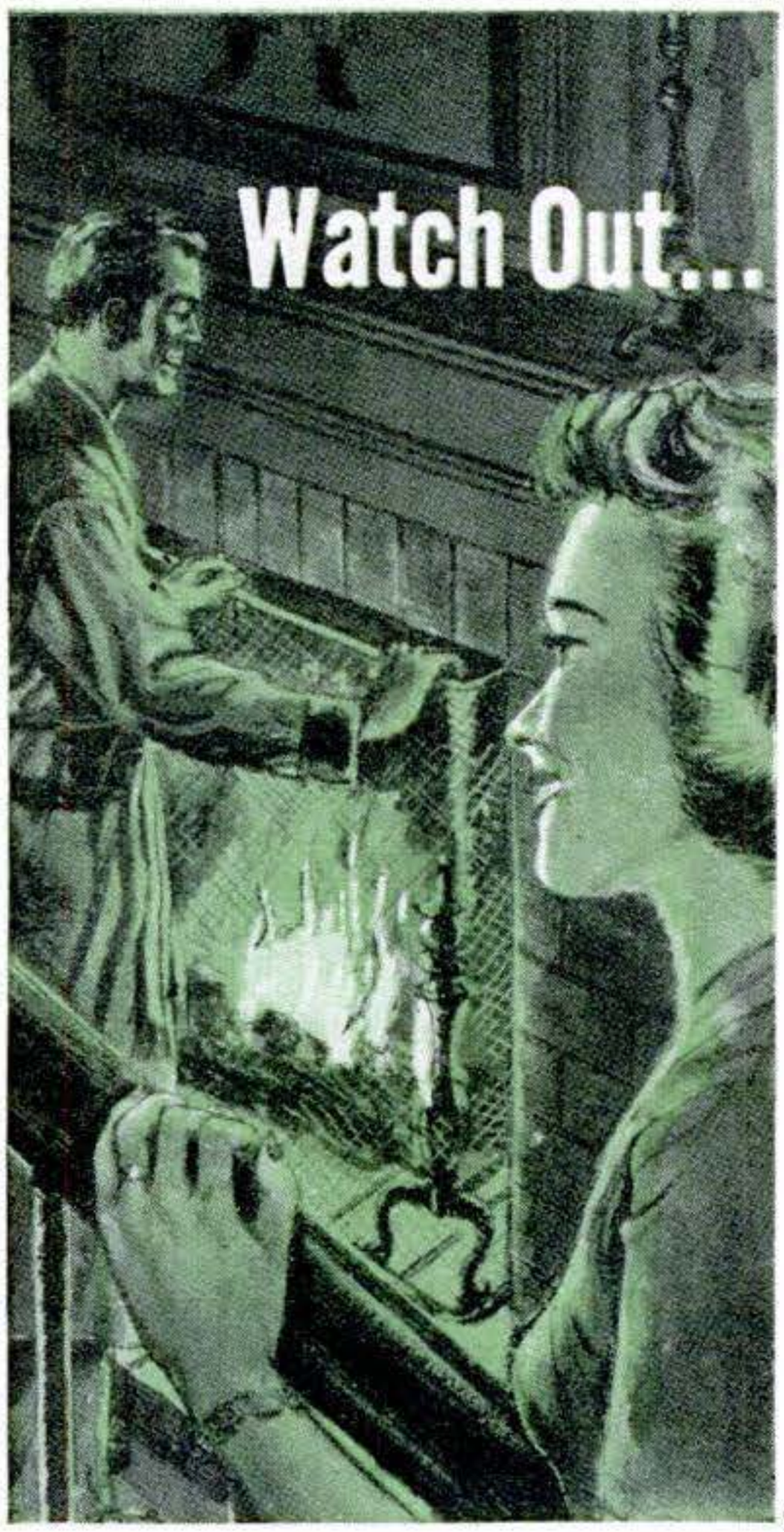


CLOSED-CIRCUIT SYSTEM rings bell not only if there's a fire, but also if thermostat wiring is broken or switch left open. This one was devised by W. H. Fogle of Beech Grove, Ind. Any number of normally closed bimetallic-strip thermostats are wired in series. If one opens, the circuit is broken and the bell rings. Test switch should be a normally closed spring type, open only when held. Pressing it releases relay and rings alarm to check the system. Double-throw switch is for turning off the alarm when you have to. It should be thrown back to reset the system, but if you forget, bell rings again as thermostats cool.

bell wire or rubber-covered lamp cord, holding it with insulated staples. Scrape ends bright, twist all joints tightly and solder if at all possible. Tape well.

If you use BX cable, fixture shells or water pipes as one side of your line, be sure connections are secure. Don't trust to simply wrapping the wire around, but fasten it under screws or with straps or clamps.

In a two-story house with attic and basement, there are actually four floors to cover. It may be simpler to use two separate alarm systems rather than run one through the entire house. END



for fire.

After falls, fires cause the largest number of deaths and injuries in the home. Twenty lives a day are lost in the U. S. in domestic fires, and in February this tragic record usually gets an added boost.

FIGURES of the National Safety Council show you will probably not have one of the 600,000 fires expected in 1953, if you **(1) don't smoke in bed; (2) keep matches in a safe place; (3) keep electrical equipment in good shape; (4) put rubbish in metal containers; (5) keep chimneys in condition; (6) don't dry-clean with inflammable liquids; (7) destroy oily rags. Some fires result from causes beyond human control. But Lloyds of London offers good odds that you won't become a fire-insurance statistic if you take all the steps listed above.**

Copyrighted material

How You Restore a Model T Ford

Six Months of Loving Work Put This Tin Lizzie on the Road Again

By R. P. Stevenson

LATE in May, 1927, Henry Ford closed up shop temporarily and called it quits on his famous Model T. The final T bore serial number 15,007,033. It marked the end of 19 years of production. Some people today call it the end of an era.

But it wasn't the end of the Model T. A quarter of a century later a few tin lizzies still chug along mountain roads and through remote farm lands, proudly bearing this year's license plates. Others have come upon dark days, in old barns, in the rear recesses of garages, in junkyards. But their future now looks brighter, for car fans are seeking them out in increasing numbers to restore as a hobby.

This is the story of how one Model T was restored, how it came back to life to shine again in original splendor and breathe its gasoline once more with pleasant little wheezes. It is the story of the new life and times of old No. 10,795,848, a two-passenger runabout built in late November, 1924, but registered as a 1925 model.

It Showed Its Age Badly

The runabout wasn't very pretty when I first saw it. Twenty years in an unroofed barn had seen to that. Rust flaked from the body, fenders, aprons, running boards, hood and instrument panel, and blanketed the engine. Daylight showed through the fend-

Copyrighted material

ers. Fabric dangled in crazy tatters between the wood bows of the buggy top. Generations of mice had nested in the seat and backrest.

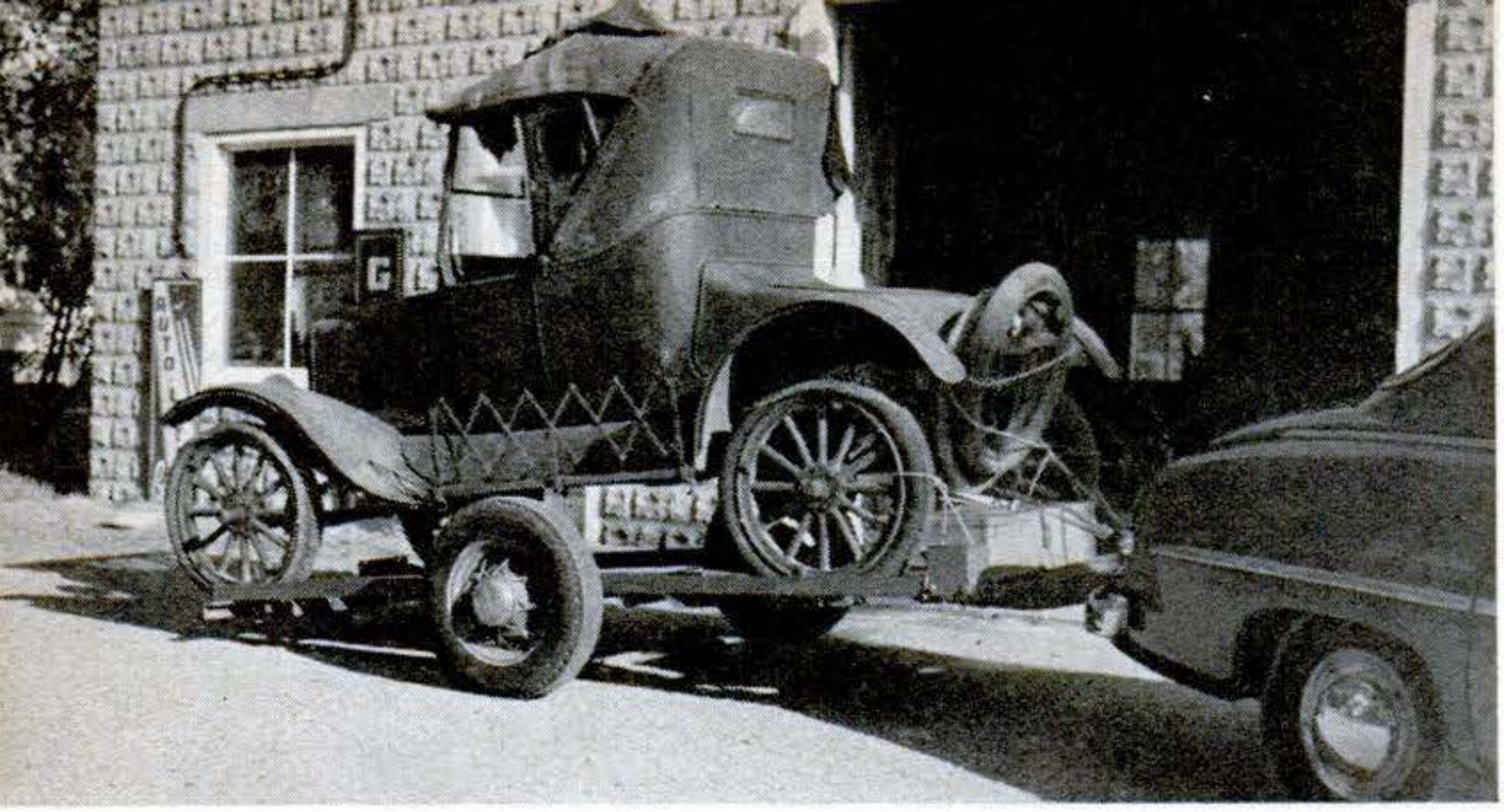
To see a fully restored and gleaming Model T in such a tangle of rust and wreckage takes plenty of vision. You also need patience and time, as well as a certain amount of money—but not nearly so much as the rich collectors sometimes lavish on rare makes. The Model T is the poor man's antique.

I paid $20 for the runabout. When I dragged it out of the barn down the road from my home in Hunterdon County, New Jersey, some people were frankly skeptical. What, they wanted to know, would I do with it—just supposing it could be fixed up? Where would I get the parts?

These questions indicate a practical viewpoint. But they do not take into account the enthusiasm that exists among confirmed T-men, an enthusiasm sparked, as likely as

F.O.B. DETROIT. A de luxe model with starter and demountable rims, the 1,540-lb. runabout cost $345 new in 1925.

		"40"	
2400	5-p	Touring	1,075
2720	5-p	Brougham	1,640
FORD			
Without Starter and Dem. Rims			
1395	2-p	Runabout	$260
1517	5-p	Touring	290
With Starter and Dem. Rims			
1540	2-p	Runabout	$345
1662	5-p	Touring	375
1772	2-p	Coupe	520
1950	5-p	Sedan, Fordor	660
1898	5-p	Sedan, Tudor	580
FRANKLIN		"10C"	
0200	[illegible]	[illegible]	$1,050



FIRST RIDE IN 20 YEARS took the 1925 Model T runabout (it's *not* a roadster) to the garage where it was to be restored. Like that joke of Model T vintage says, its 30-by-3½ tires were only flat on the bottom.

not, by a nostalgia for cars as they used to be.

By modern standards, a restored Model T doesn't offer much as a practical everyday car. If you used to drive one, you may be surprised, as I was, at how slow it now seems. And you will realize once more that the wit of long ago spoke truth in saying that a Model T's only shock absorbers were its passengers. It rides harder nowadays than an MG.

The Payoff Is Pleasant

But when the job is done, there will come sunny days, free afternoons when you crank up the T, tell your family or best girl to pile in, and set off just for a ride, headed nowhere in particular. Or maybe you'll have a destination—to show off your new buggy at an antique-car club meet or in a parade. As you ride, you'll get a kick, as everyone does, out of how high you sit above the ground. And when you start down a familiar hill, you'll be surprised at how steep it suddenly seems—when viewed from the front seat of your Model T.

As a hobby, working over a dilapidated Model T offers plenty of stimulation for those with mechanical inclinations. If you run into difficulties, somewhere in your neighborhood there undoubtedly is a veteran mechanic who can straighten you out. With luck, you might even find a man as competent as Charley Case of Annandale, N. J., who overhauled my runabout mechanically from crank to tail light.

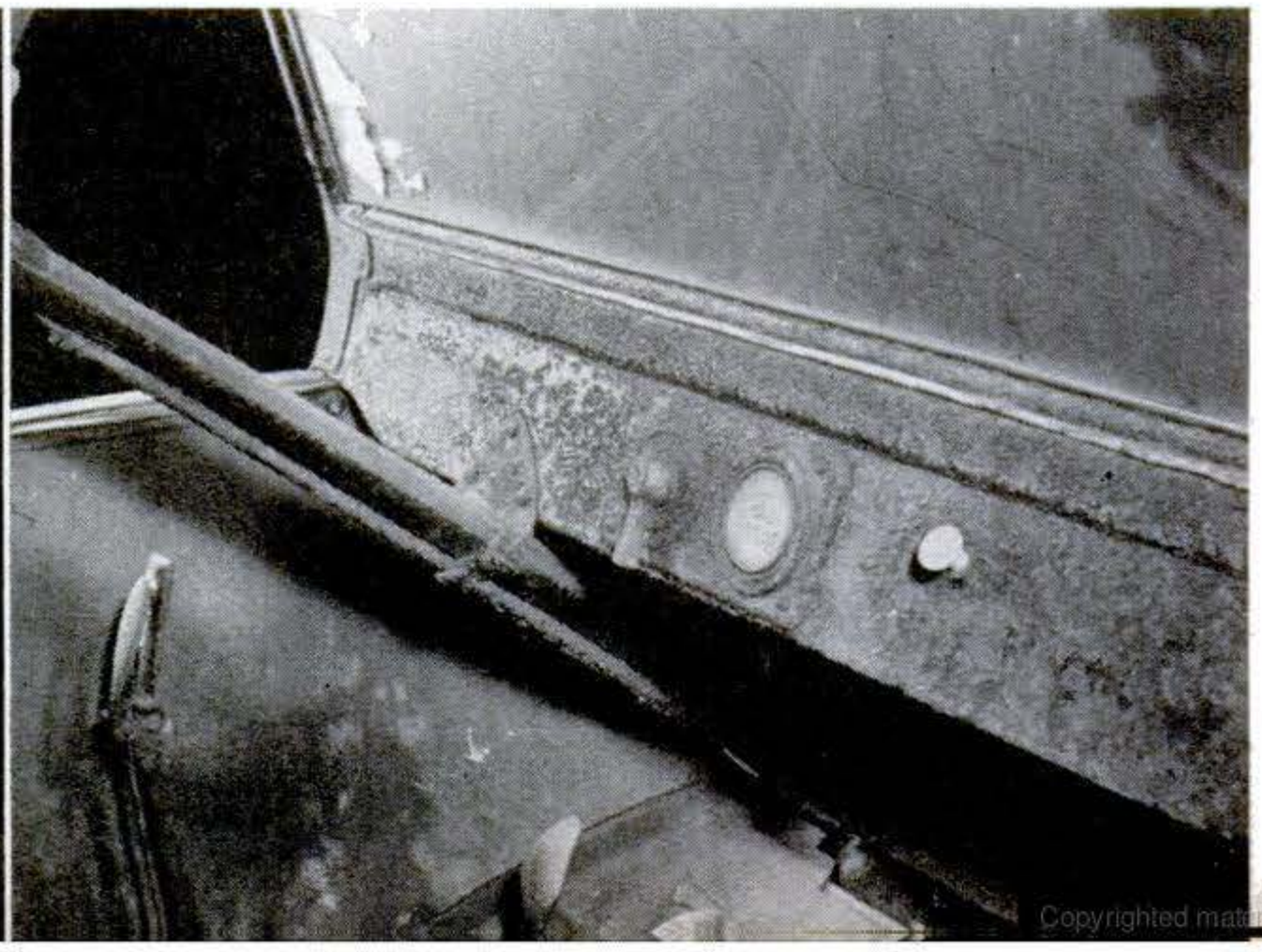
Only a few parts are made new for Model Ts these days. I had to hunt hard for some necessary items. But looking for parts can be as interesting as actual restoration work on the car.

On two occasions, the hunt carried me back to horse-and-buggy days—once to a harness shop to have the leather fan belt stitched, and again to buy a pair of hame straps. Shortened a bit with new holes punched, the hame straps worked out perfectly as hold-down straps for the new top when it was thrown back.

During this hunt, I found, too, what a conversation piece a Model T can be. Everyone over 35 seems to have a story to tell

CHARLEY CASE, who brought the T back to mechanical perfection in his garage at Annandale, N. J., tries the seat for size and gives the rotted top another rip.

RUST EVERYWHERE—even on the dash. That scrap of paper on the far corner of the windshield was part of the original instruction sticker for owners that new cars used to have.



Copyrighted material

about his exploits with a Model T. In fact, I have one of my own—how I first drove a Model T, about 1919, using a wire fence staple as a substitute for the old-type ignition key.

Staple Just as Good

I don't know how I happened to discover this. Just experimenting, I suppose. But the two prongs of the staple I had sorted out of my pocket slipped right into the ignition lock down on the coil box.

I had gone with two older brothers that day to the far end of the farm in the family flivver. While they attended to some chore, I waited in the car. It was still new and *very* intriguing. I wanted a chance to shove down the three pedals and manipulate the spark and gas levers in a bit of make-believe driving.

When the staple turned on the ignition, I had all the elements of something far more exciting than mere make-believe. I had never driven a car, but I had watched. My brothers were over the hill, well out of sight.

I gave the crank a jerk. The engine took off. Climbing behind the wheel, I did, too—in a big circle around the field. I was still a bit breathless when my brothers returned. I wondered whether they would notice that the flivver wasn't parked in quite the same spot it had been.

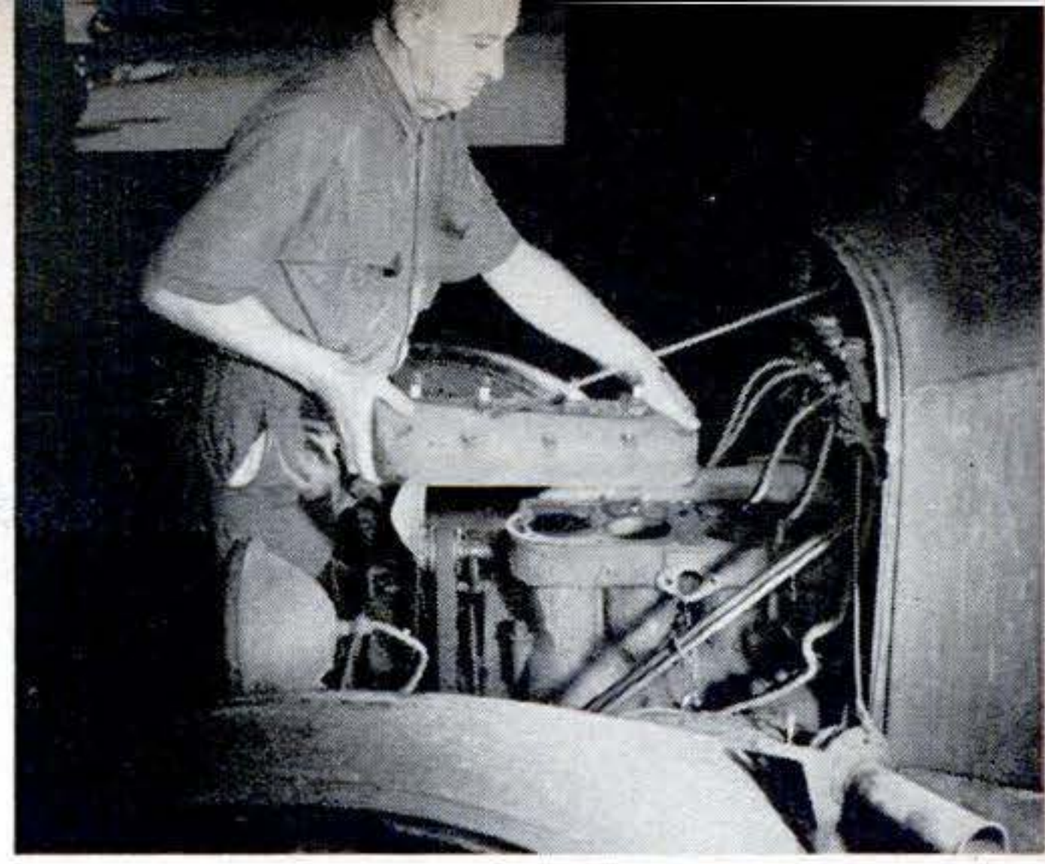
This story has a sequel, too. My brother, it developed, had lost the ignition key. After awhile and still wondering whether I should part with such a useful bit of information, I made the discovery again about that staple. It got us home.

There was also the chap who had driven all the way from Los Angeles to the outskirts of New York without trouble—quite a trek in Model T days—when a horrible clatter started up under the hood.

Two Blades Are Enough

A look showed one of the four fan blades missing. It was not the lost blade that was causing the clatter but the remaining three. The driver dug out his tools, broke off the blade opposite the missing one to balance the fan, and drove on into the city with the motor purring sweetly.

Model Ts were rugged. They were built



REMOVING CYLINDER HEAD was easy, for someone had lifted the cap screws. But nothing else was missing. When juice was applied, horn gave out its characteristic *bur-r-r-r*.

to take it. I heard a story about that, too—from the farmer in whose swamp I finally found a pair of top rests, the projecting brackets that support the bows while the top is down. I pulled the rests from one of several derelict Ts junked in the swamp.

"The Model T truck was parked there in front of the barn," the farmer said, indicating a sloping, downhill area. "I was unloading some feed. When I came out the door, the truck was gone.

"I ran around the corner. There it was—still bouncing down the hill. It broke through three fences, knocked down a couple of small trees and finally stopped in a plowed field over yonder. I went down and drove it back. Nothing wrong except a bent fender."

RECOGNIZE THIS? Until 1919, all Model Ts had identical ignition keys—and this was it.

I hear stories like this every time I set out in the runabout, now fully restored. The car still is not exactly pretty. That never was the adjective to apply to a tin lizzie. But it has plenty of character. The engine purrs in steady contentment to the regular clicks of the coil vibrators.

Everyone wants a ride—with a few exceptions. One man looked and admired, but rather reluctantly. He refused an invitation to drive her, wouldn't even take a ride. Said he had had a bellyful of Model Ts, more than enough to last him a lifetime. There *are* people like that, for the Model T—like Franklin D. Roosevelt—had both partisan followers and bitter detractors.

Despite its original looks, the runabout was still in good mechanical condition when

Copyrighted material

EVERYBODY LOVES A PARADE, they say, and when you own a restored Model T you're sure to be invited. Here's the runabout in 100th anniversary parade at Annandale, N. J.

I bought it. It had been driven very little. Charley Case first noticed one sign of this. The spring hangers still rode high, with a full finger's clearance between their lower edges and the axle. These hangers were always among the first parts of a Model T to grow tired from use and age, eventually sagging down to the axle and sometimes scoring it deeply.

Along with the runabout, I got half a truckload of parts. The old barn would have been a treasure house for any Model T fan. It was plain that the original owner had loved to tinker with cars, urged on perhaps by the 1920 copies of POPULAR SCIENCE MONTHLY that lay nearby.

Since restoration of the runabout was to be sponsored by PSM, three staff members joined me one sunny day last spring to move it to the repair shop.

Using a winch, we dragged it onto a trailer. Incidentally, it is never advisable to tow a Model T, even in neutral, for there is too much chance of damaging the transmission. If a tow truck is used, roll it on the front wheels.

Charley Case, proprietor of the Annandale Garage, was waiting to see what sort of critter this was descending upon him.

This Man Knows His Ts

Actually, he knew pretty well what to expect, for I eventually discovered that he has worked on each annual example of the Model T ever made—from the 1909 models (which appeared in 1908) to the final '27s with their lines so strongly suggestive of the forthcoming Model A.

As we loosened the tie chains and rolled the runabout down off the trailer and over to the corner where it was to experience a rebirth in the coming months, he recalled one of the many Ford jokes that were prevalent in the heyday of the Model T.

"You know why it was called a runabout, don't you?" he asked, holding his hands about three feet apart. "Every time it was fixed, it would only *run about* this far."

But that is pure libel. The runabout never gives up—well, *almost* never. END

Next month: How to overhaul a Model T engine.

Where Do You Get Parts?

SOONER or later, every bystander pops out that question when you start restoring a Model T.

Ford dealers long established in rural areas are one good bet. Some may even have body parts, fenders, splash aprons and such.

Mail-order catalogues may have what you want, too. Recent catalogues list these parts: Sears, Roebuck & Co.—spark plugs (½" pipe thread), transmission bands, pistons, piston rings, piston pins, timing gears, valves, ignition coils and points, gasket sets, front-wheel bearings; Montgomery Ward—30-by-3½ clincher tires and tubes, fan belts, timers, coils and points, gaskets, pistons, expander piston rings, timing gears, front-wheel bearings.

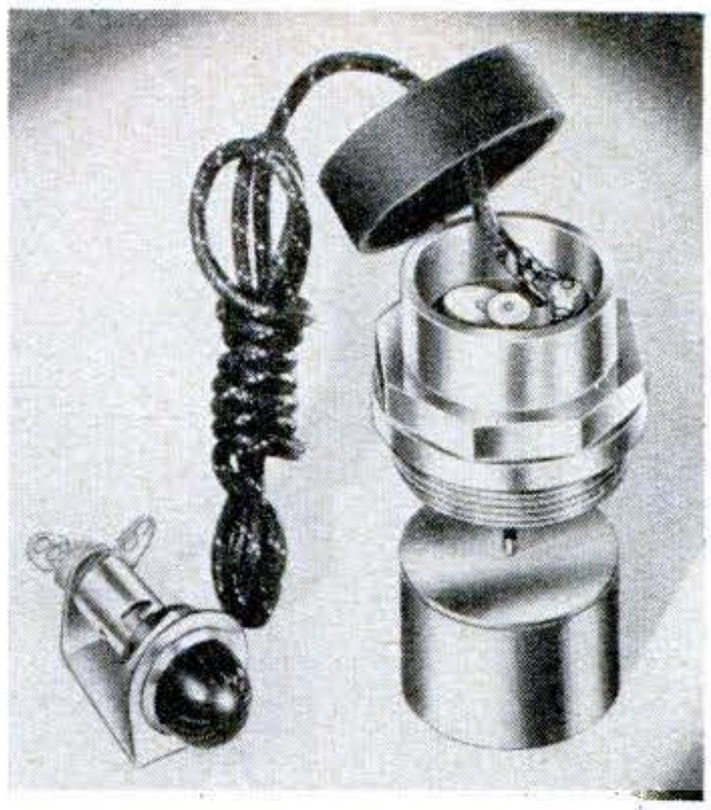
William Scharff, 1322 Myrtle Avenue, Brooklyn, N. Y., has a good stock of factory parts—no body parts.

Classified advertisements in magazines and antique-car-club journals also may list what you need.

Copyrighted material

Making Driving Safer

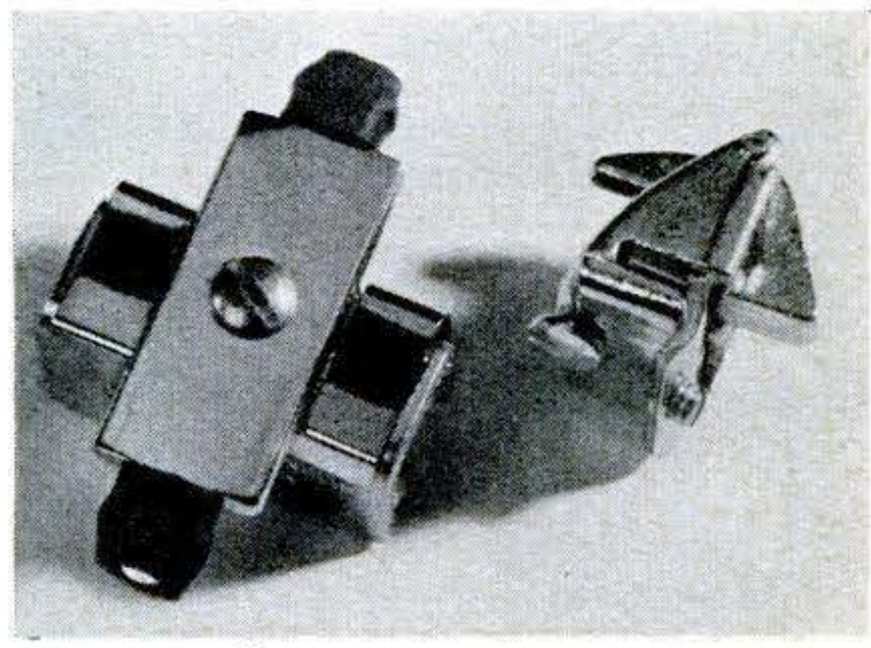
These new accessories will improve your chances of steering clear of mishaps on the highways.

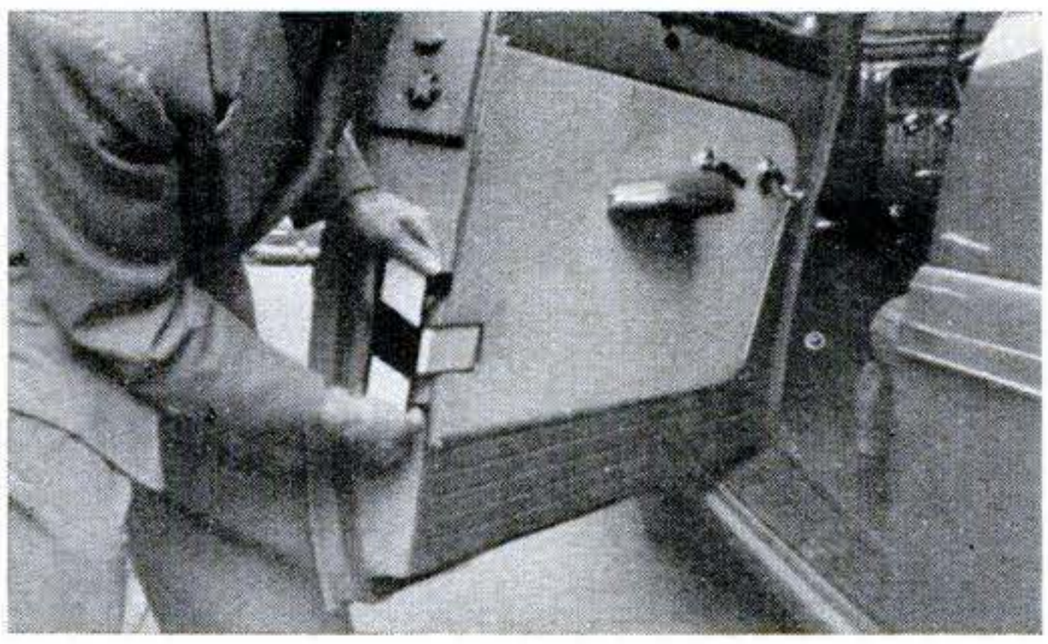


Loss of brake fluid will be brought to your attention immediately if you install this indicator. Substituted for the filler plug in the master cylinder, the indicator includes a float that closes an electrical circuit, turning on a red warning light if the fluid drops below a safe level. *General Metal Products Corp., Wilmington, Ohio.*

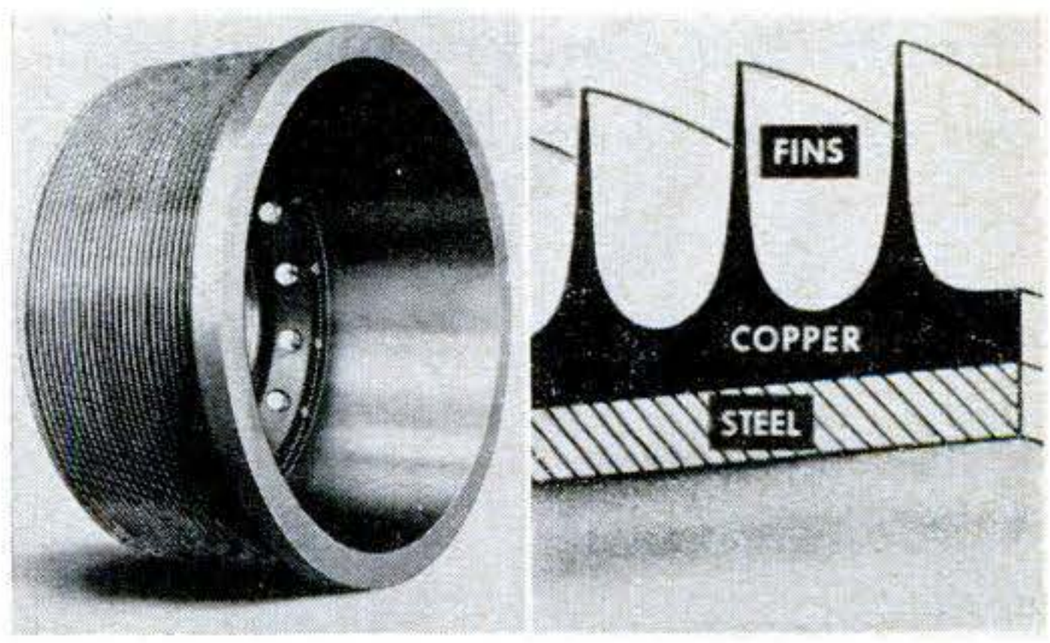
A spare headlamp doubles as a trouble light in a highway safety-light kit produced by Westinghouse. A long cord plugs into the lighter socket and a special clamp supports the lamp. The kit also includes a reflecting caution sign for night use.

New locks that attach to the drip rail above the doors reduce the chances that children may tumble out while a car is in motion. Safety latch (far right) has a lip that blocks the door until a lever on top—beyond reach of childish hands—depresses the lip out of line with the door. As its name suggests, the Twistlok (right) includes a twisting member that moves into the line of the opening door. An adult must use both hands to work stops and arm to open door. *Spencer Specialties (safety latch) Los Angeles; Sleetex Co. (Twistlok), 404 Fourth Ave., NYC.*





A reflecting marker mounted on the edge of the driver's door will warn motorists behind to give you clearance if you sometimes indulge in the bad practice of opening the door in traffic. Two metal prongs slip under panel, holding Exilite, *Detroit Grille Mfg. Co., 258 E. Vernor, Detroit.*



A steel brake drum with copper fins to dissipate heat is said to increase braking safety. Available for trucks and buses, it may eventually be offered for cars. A band of copper is welded to the steel drum. Heat of brake friction is carried away by copper. *Copperweld Steel Co., Glassport, Pa.*

Copyrighted material

Gus Meets a Deadline

Shooting the mayor—even with a news camera—was a little out of Gus's line. No wonder there were unexpected developments.

By Martin Bunn

GUS stopped at the *Times-Chronicle* office on his way home one bright, cold Saturday afternoon—his paper hadn't been delivered for several days. Zelda Haworth, society columnist, was noisily pounding a typewriter, and Gus stood for a long moment before he caught her eye.

"Hello, Zelda. Anybody around to hear a small complaint?"

Just as she opened her mouth to speak, Will Gagan, reporter and photographer for the *Times-Chronicle,* came hurrying through the back door from the print shop.

Copyrighted material

"No, no, no," Gagan whispered as Gus took aim. "Get something dignified!"

"Just the guy I want to see," Will said. "Come out to the alley."

"Sure. What's back there, a little game in the old shed?"

"No," Gagan almost whispered. "You know me better than that!"

Gus grinned and followed Will. It was true. He did know him better than that.

Will Gagan, who comprised a fourth of the staff, was a quiet man. If a newsman was expected to cut a dashing figure, Gagan would have been a disappointment. He didn't drink, gamble, strangle telephones or shout "gimme the city desk" out of the side of his mouth.

"It's my car. I have to cover the groundbreaking for the new munitions plant outside of town this afternoon. Big thing, mayor and Army brass. I don't trust the old bus to get me there, and if it did, there's the matter of getting back in time to get the story and pictures under the deadline. It's okay as long as the engine is turning over fast. Slow down and it dies. I can't go speeding around on this icy pavement. As a matter of fact, the only way I can drive at a slow, safe speed in this slush and not stall, is to slip the clutch slightly and let the engine race. I know the clutch will take only so much of that treatment . . ."

"Now look, Will. I just left the garage. I've had a busy week and I'm taking the rest of the day off. Can't you borrow a car?"

"Nobody else in the shop has one. Even the delivery truck is out. Of course, I could get another mechanic . . ." Gagan made a long face and waited.

Gus Makes a Try

"Okay. Okay. Give me the key and I'll see if I can start her."

"No, not that way. That battery is too weak from me standing on the starter so much. I'll crank it by hand while you work the gas."

Gus opened the hood and worked the throttle while Gagan turned the crank. The engine sputtered and died. He tried again, hard.

"Ow!" Gagan stepped back, wincing and holding his shoulder.

"What happened?"

Copyrighted material

"I think . . . I pulled a muscle."

"I might have known. You newspaper boys get too soft sitting behind a desk! Why don't you run over to Doc Tandy while I work on this?"

"There isn't time. It'll be okay, but you'll have to crank."

Engine Acts as if It Needs Tuning

Gus locked the throttle at a point which would give the engine plenty of gas. A few turns of the crank had the engine running. It wasn't as smooth as it should be, but it acted like tuning was all that it needed.

"Slow it down, Gus, and watch what happens."

Gus closed the throttle and waited. The engine ran for a while, hesitated, then died. He puzzled over it for a moment.

"Got some tools?"

"A few, here in the trunk compartment."

Gus found what he wanted, removed a plug, and examined the electrode and its inside surfaces. It was wet and dark, gas-fouled.

Gus went around to check the carburetor. He saw then what he hadn't noticed before. The choke arm lever was bent, not much, but enough to shorten the linkage and hold the choke open a fraction. It wasn't flooding the carburetor, but it provided a much richer mixture than was needed.

He straightened it out with pliers and cranked the engine. It started easier this time.

"I think that's all it was." He slowed it down. "See? Even idles now. Let's go for a ride and test it. It'll run the battery up, too."

"We're getting short on time. Less than an hour until the ceremony."

"We'll make it. We can head out in that direction. You can't drive with that shoulder, anyway."

Gagan agreed, and they drove out of the alley. Gus began racing the engine a little to clean out the fouled plugs.

Before long, as they got out into the country, the traveling became more difficult. The road was covered with icy slush.

Gus had gradually slowed the engine, and now began to let it lug. It rumbled huskily for a quarter of a mile. The car wouldn't run that slowly before. But just as he was congratulating himself, the engine died. He pulled to the side of the road.

"Now we *are* in a spot," Gagan moaned. "Can't you do something?"

"Well, we know it isn't your carburetor mixture any more. Now it acts like your engine isn't getting gas. Maybe you need a new fuel pump."

"That's a new one. Look, I'll give you the whole story. The trouble started yesterday when I drove to Long Island to pinch-hit for the boss at an editors' convention. I took it to a garage, and the mechanic put a new pump in. Ran fine for six blocks! During my second visit, he blew the fuel line out. And it ran until I hit some traffic." Gagan lit a cigarette. "After being very late to the convention, I found, like I said before, that by slipping the clutch just enough to race the engine and still creep along, the thing wouldn't stall on me. The boss is up a tree about my being late yesterday—it wouldn't help to repeat that performance today!"

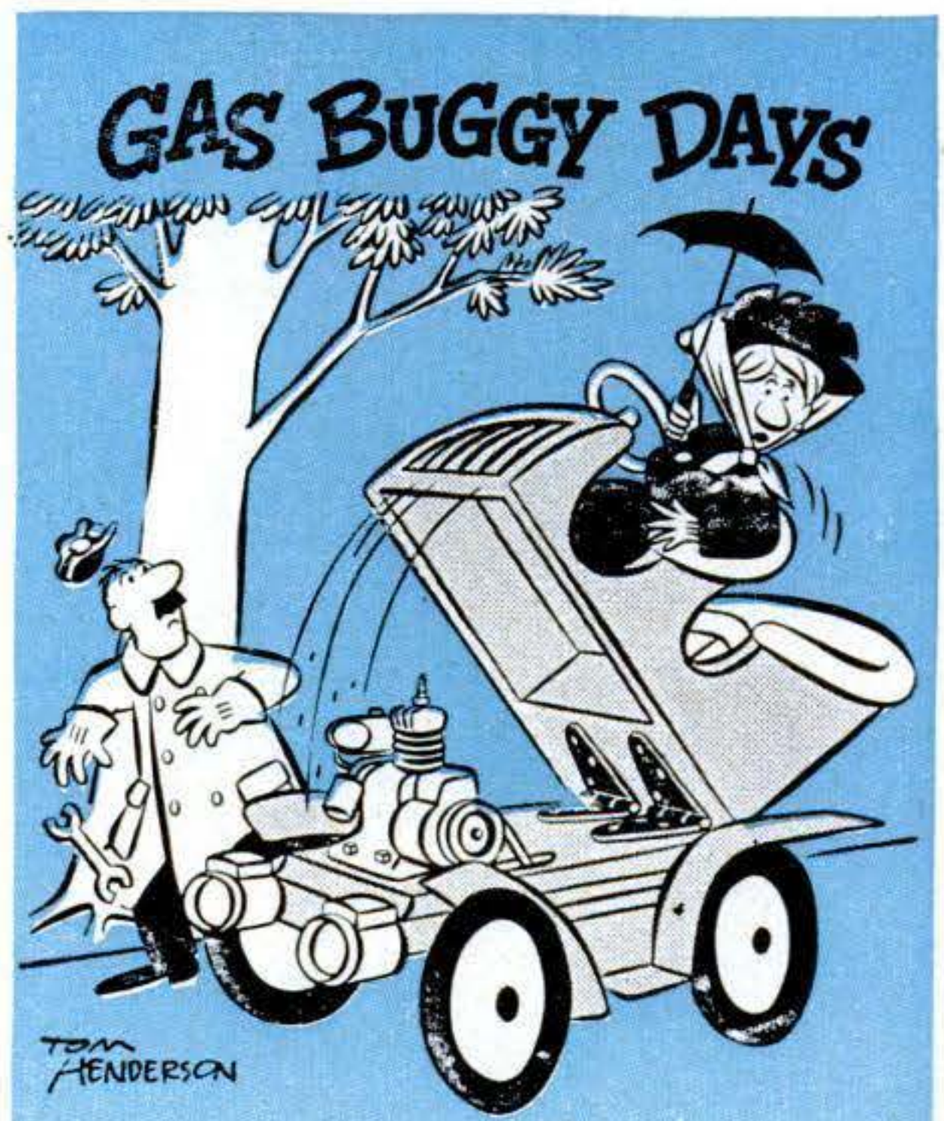
"Don't give up yet." Gus stepped out of the car and went to work.

The fue pump and carburetor were okay. That much had been established. A quick look showed that the filter unit was clean. Next suspect was the copper fuel line. Gus disconnected it at both ends, at the tank and at the fuel pump. He turned to Gagan.

"Hold your finger over that end, while I put pressure on the line."

Gus wiped off the other end and blew

[Continued on page 252]

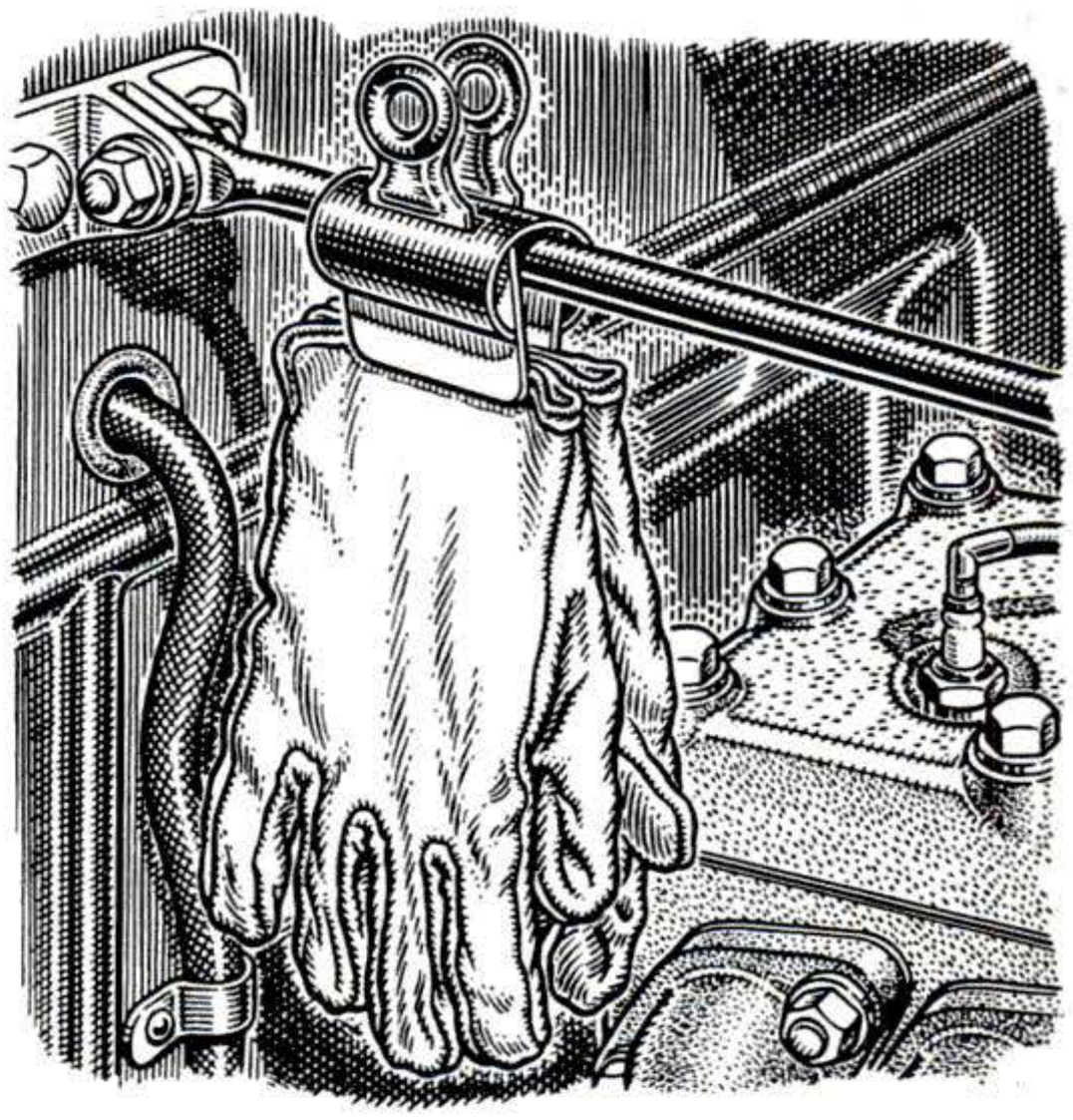


IN THE Model car, circa 1905, the designer thought of everything. The engine was situated under the seat, but it was a cinch to get at it for repairs. You simply lifted up the body, which was conveniently hinged at the back.

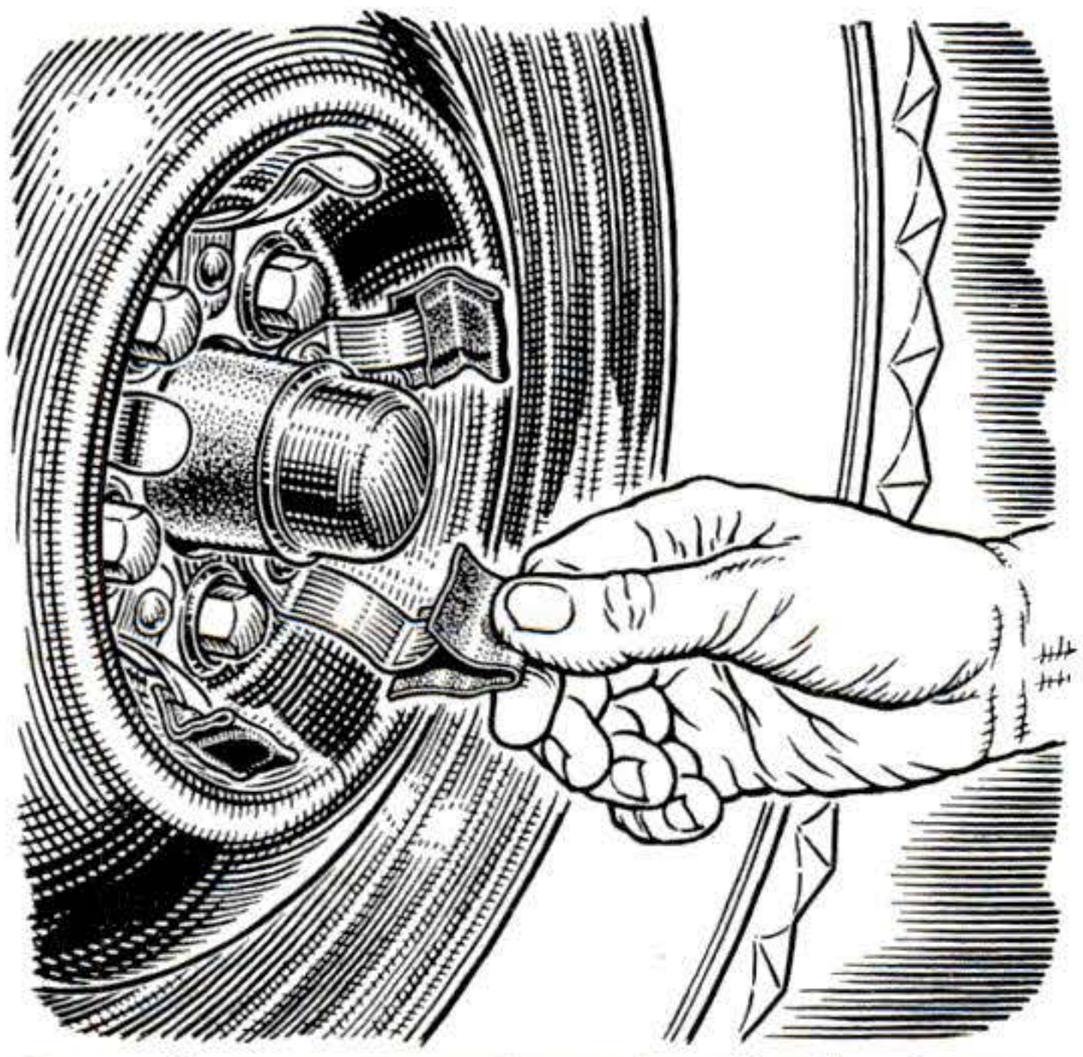
Copyrighted material

Hints FROM THE MODEL GARAGE

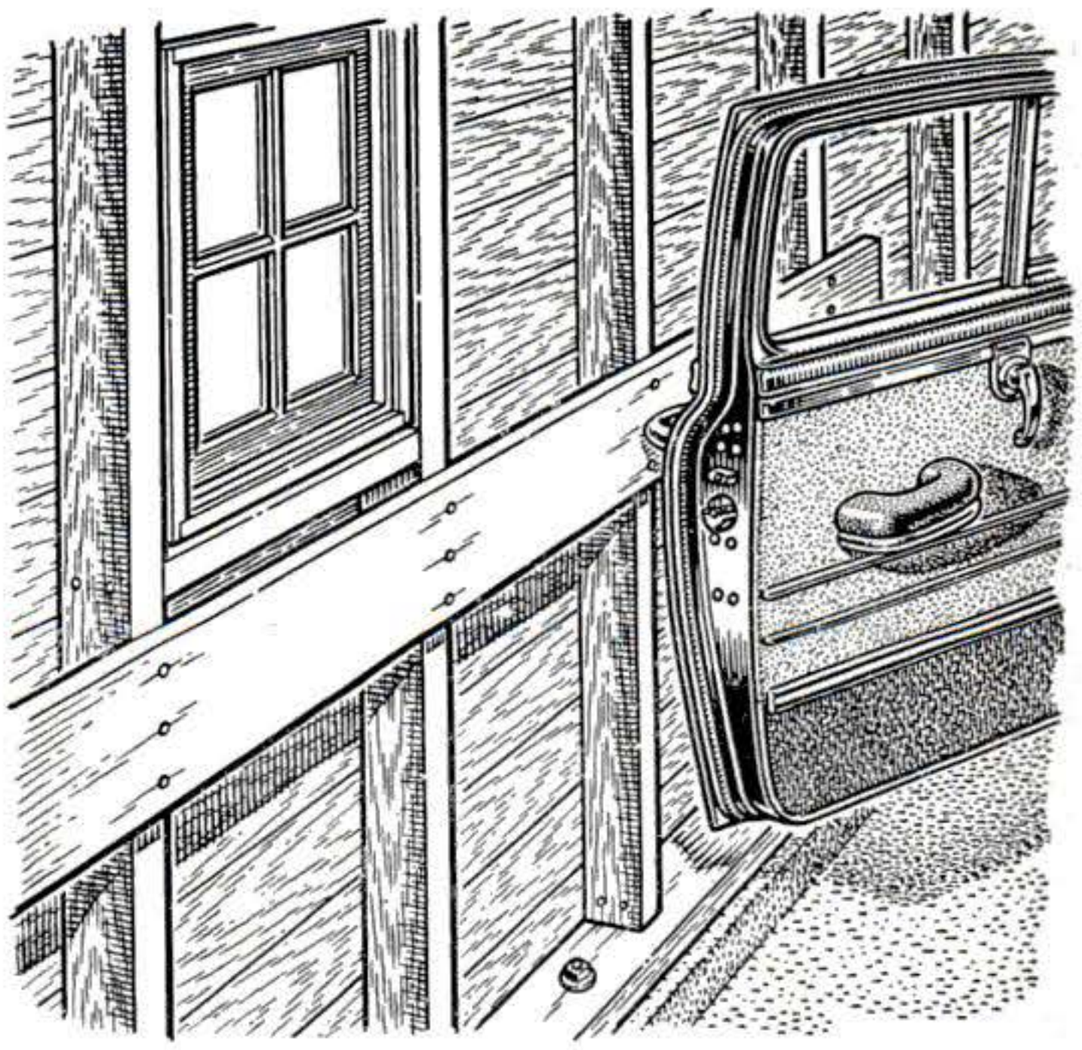
Back up your plates with composition board or exterior-grade plywood to keep the thin metal from becoming banged up in parking scrapes. Run fasteners through plate and board on both edges; use two bottom screws to mount the assembly to the car.



A trucker's gloves will dry as he drives if clipped under the hood like this. A big paper clip astride the radiator support rod is one way to hold them near the hot exhaust manifold. With two pairs along, he can have one pair drying at all times.



Squeaks may come from the wheels of even a new car. If you have trouble tracking down an elusive running-gear noise, don't neglect the hub caps. In one case, removing the caps and applying a strip of tape on each clip silenced a mysterious chirp.

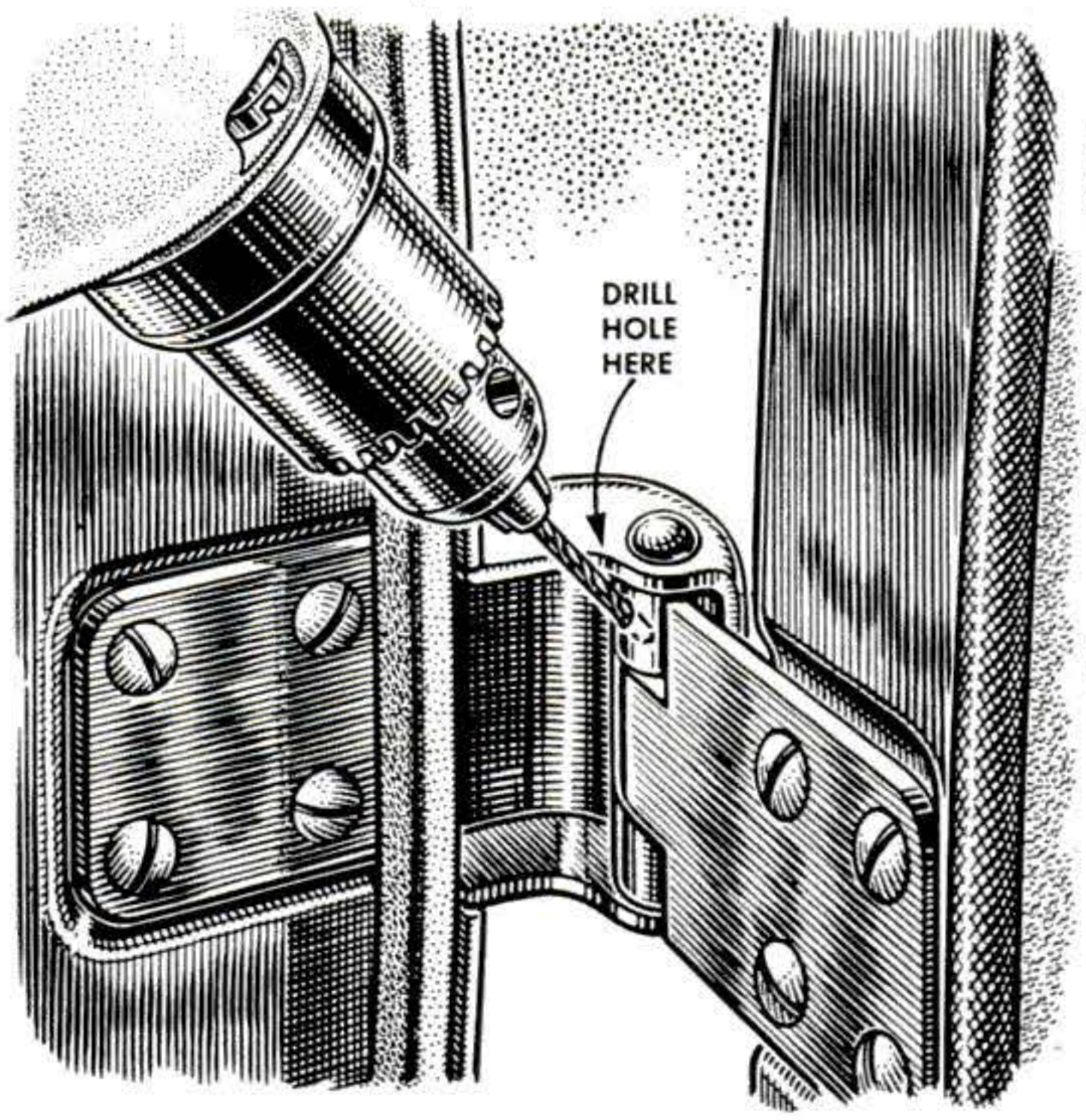


A bumping board placed inside the garrage at the height of the car-door handles will keep the door from being sprung if the car rolls back with the door open. An 8″ board placed at handle level will give the driver time for second guesses.

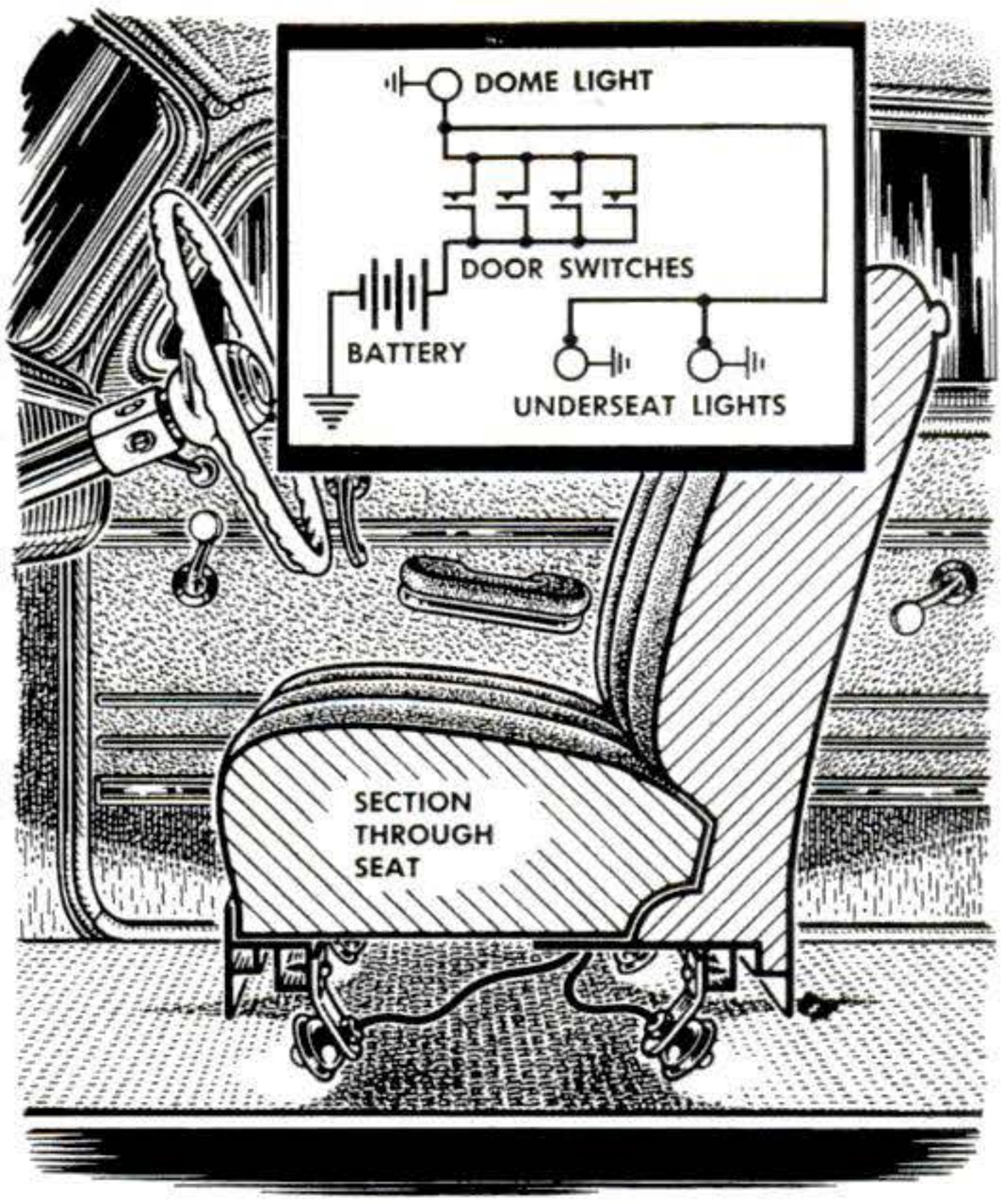
Please turn the page for more auto hints.

Copyrighted material

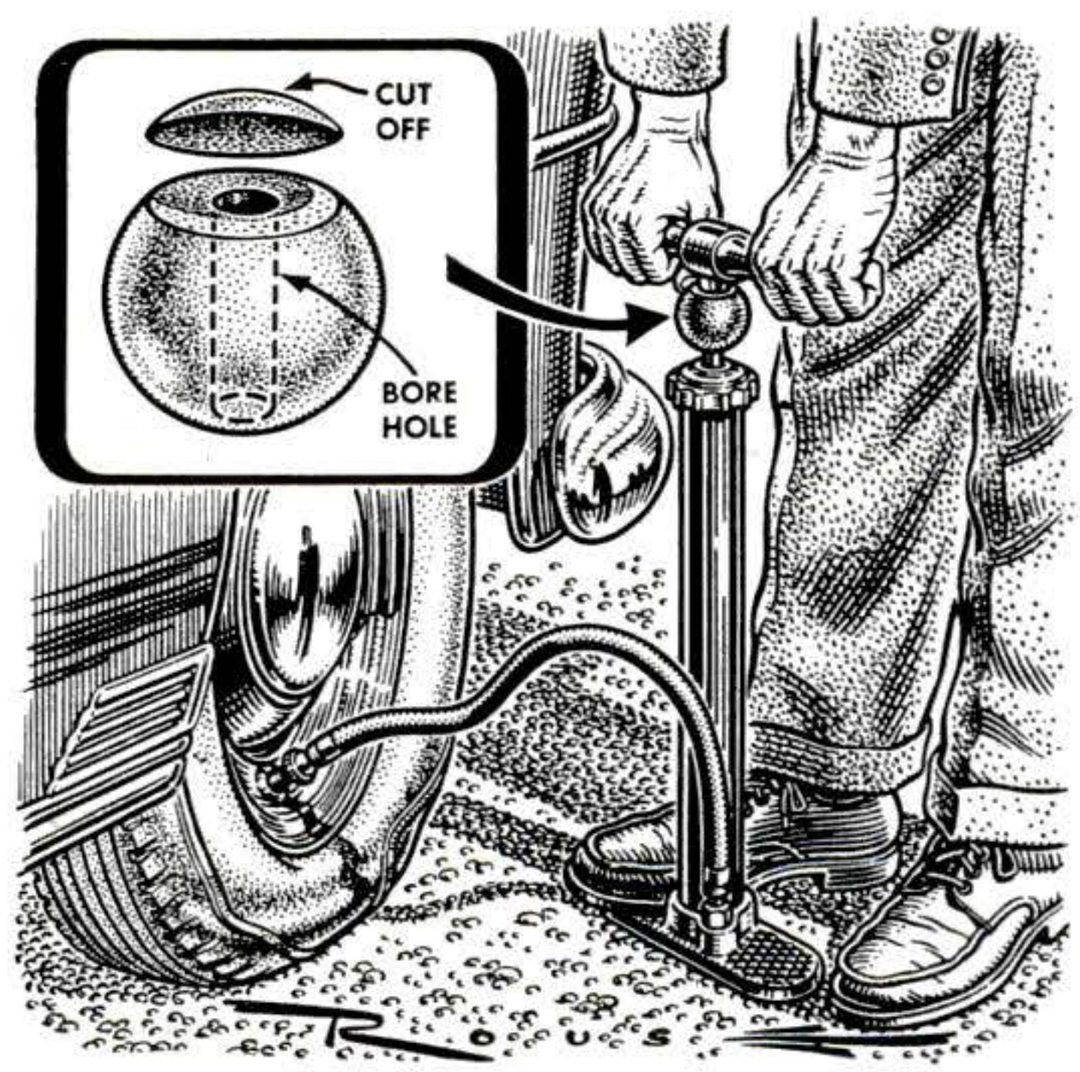
MORE Hints from the Model Garage



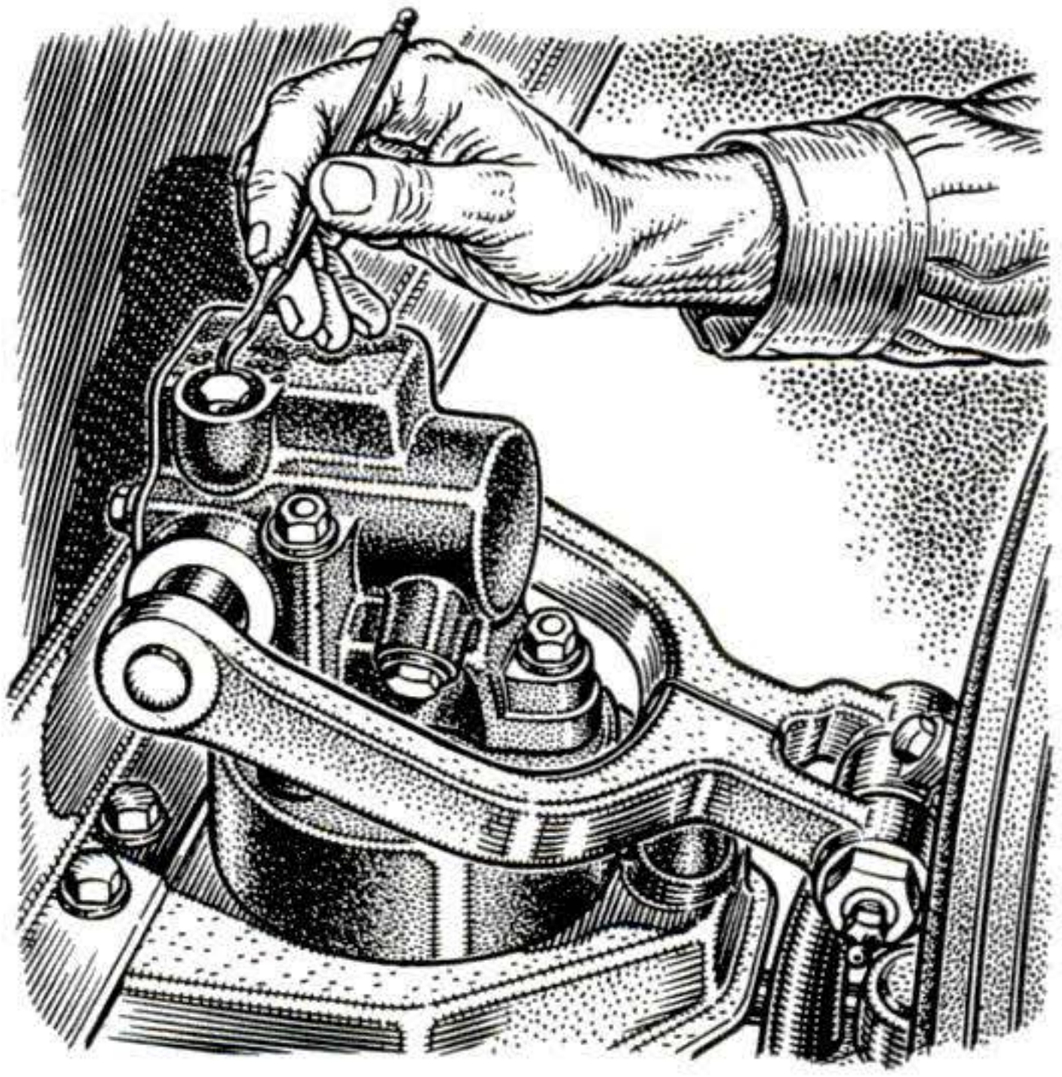
External hinges on the doors of old cars often develop a rusty-gate wheeze, and oil squirted on the hinges may do no good. As a remedy, try drilling a small slanting hole near the top of the hinge, going just to the hinge pin. Fill the hole with penetrating oil and let it work down the length of the pin.



Lights on the floor are a big convenience in a car and easy to install. Get a pair of truck marker lamps, remove the red glass and bolt the lamps under the front seat so one will shine to the front and one to the rear. Wire the lamps as shown so that the door switches will turn them on along with the dome light.

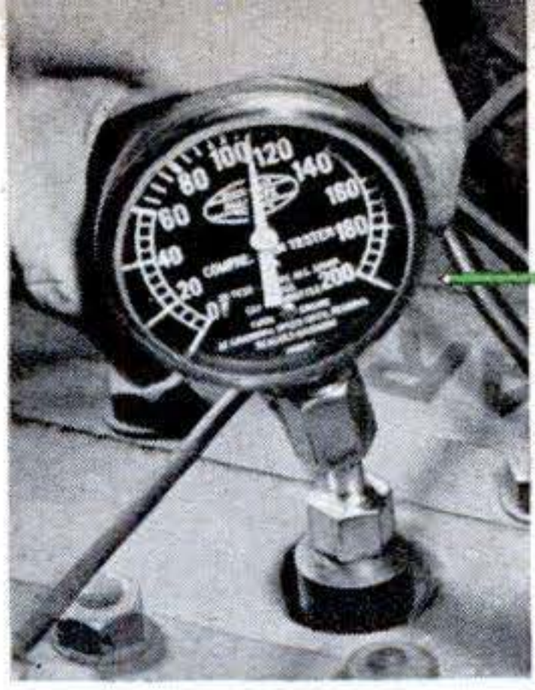


A small rubber ball can be made into a shock absorber for a hand pump. Cut a slice off the ball and drill a hole so that the ball is a snug fit on the pump rod. If the rod bottoms before the ball takes up the shock, shorten the rod slightly.



Clean dirt from around the filler plug of this type of front shock absorber before attempting to remove the plug. Unless you do, there's a good chance the socket won't go all the way down, you'll round off the plug corners and never get the plug out.

Copyrighted material



What a Compression Gauge Can Tell You

Cylinder pressures developed in a car engine offer clues to trouble if you can read them.

Conclusions that can be drawn from the chart (below) of a compression test which the writer made on his car:

No. 7 cylinder definitely was losing pressure. The oil seal in the second part of test increased the pressure only slightly, indicating that trouble is mostly in valves or perhaps the gasket.

No. 8 seems to have a valve or gasket loss, although not great. No. 1 cylinder, which made a good recovery when oil was introduced, apparently is losing pressure past the piston.

Gauge variation or carbon build-up may explain the fact that the average dry compression is higher than the 120 pounds specified for this engine as normal. Wet test was not made on cylinders that seemed okay on the first test.

CONSIDERING how little it costs and what it can tell you, a compression gauge is one of the best tools that a car owner can have. In skilled hands, it will point to such trouble-makers as:

- Sticking valves or worn valve seats.
- Worn or sticking piston rings.
- Scored cylinder walls or worn pistons.
- A blown cylinder-head gasket or loose head bolts.
- Sizable carbon deposits in the combustion chambers or on the tops of the pistons.

The object of a compression test is to measure the pressure developed in each cylinder by the movement of the piston. The gauge gives readings in pounds per square inch. Using one may save you money by revealing a fault while it still can be corrected easily.

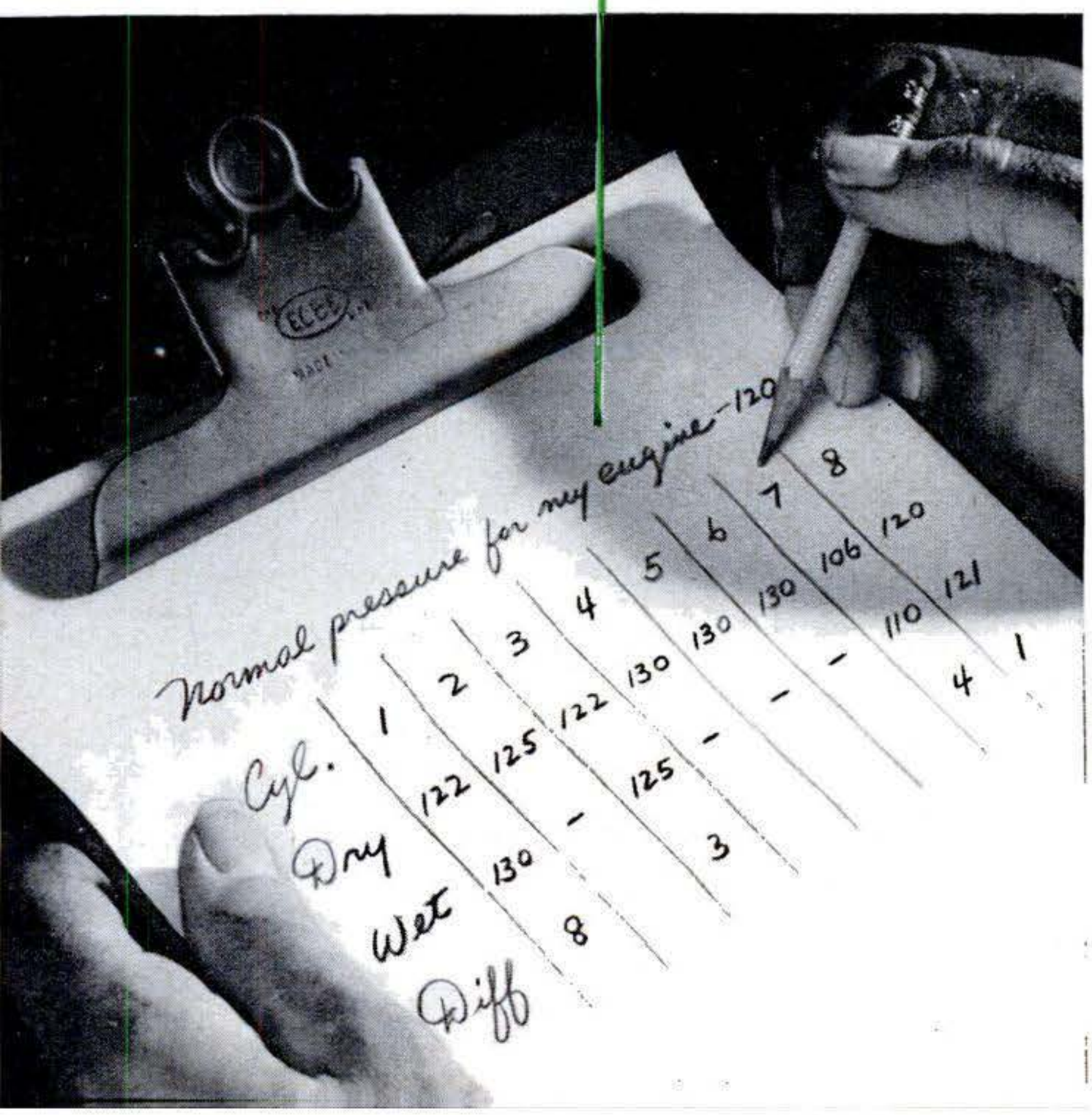
To run a test, first warm up the engine oil completely, perhaps by taking the car for a drive. Be sure, too, that the battery is definitely well charged.

Blow all dirt and dust from around the spark plugs and remove the plugs and their gaskets.

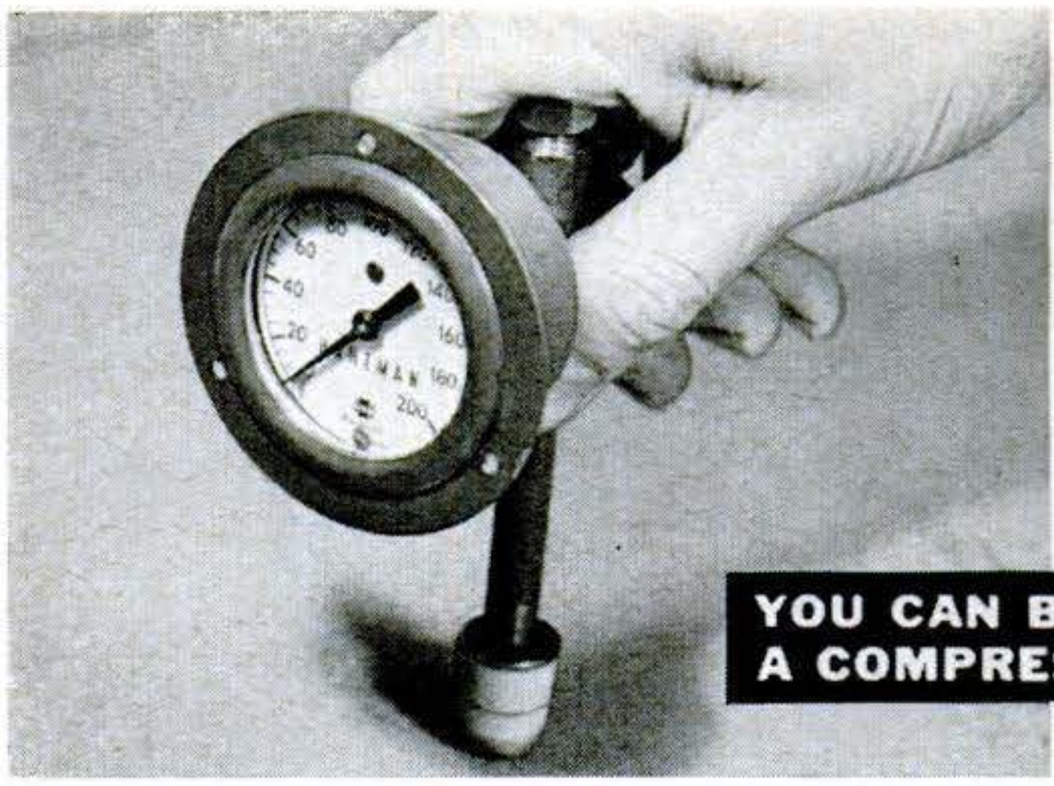
Disconnect the high-tension cable that runs from the coil to the center terminal of the distributor cap. Usually the throttle and choke valve should be open, although directions with some commercial gauges may say to keep the throttle closed.

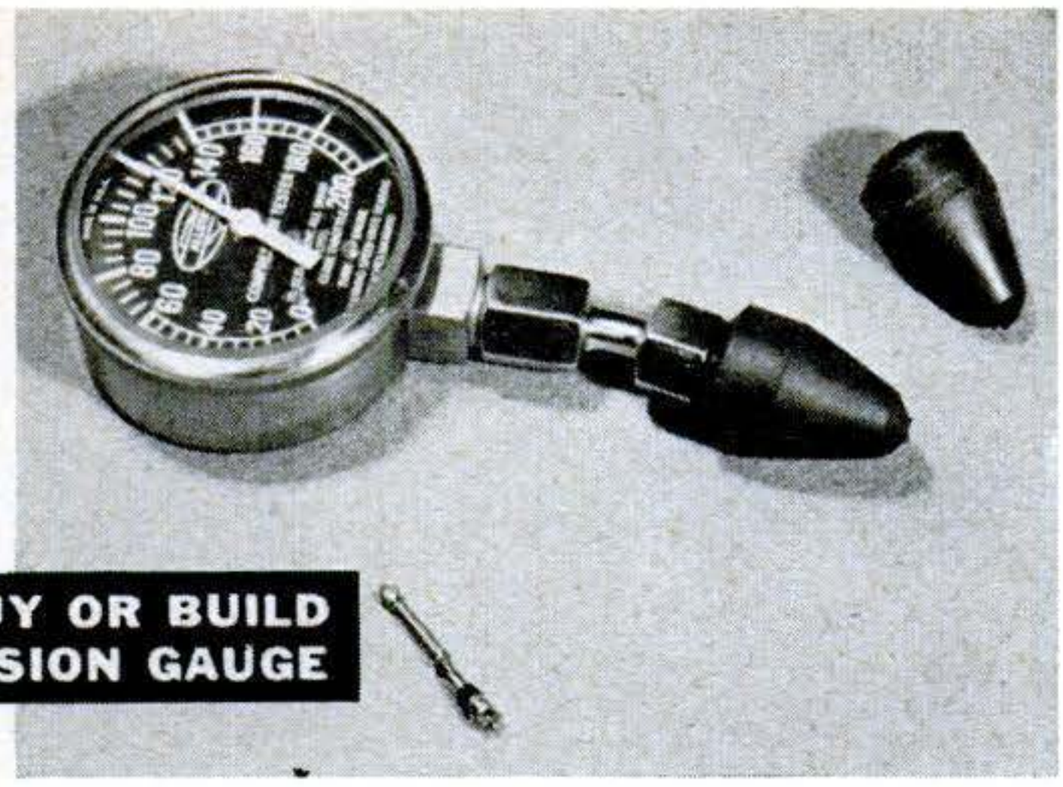
Connect the compression gauge to the spark-plug hole of the first cylinder. If the gauge has a rubber-cone tip, simply press the cone firmly and squarely into the hole.

Operate the car starter, turning the engine over several times until no further increase in gauge pressure is seen. If your starter switch is solenoid-operated and you don't have a remote-control



Copyrighted material

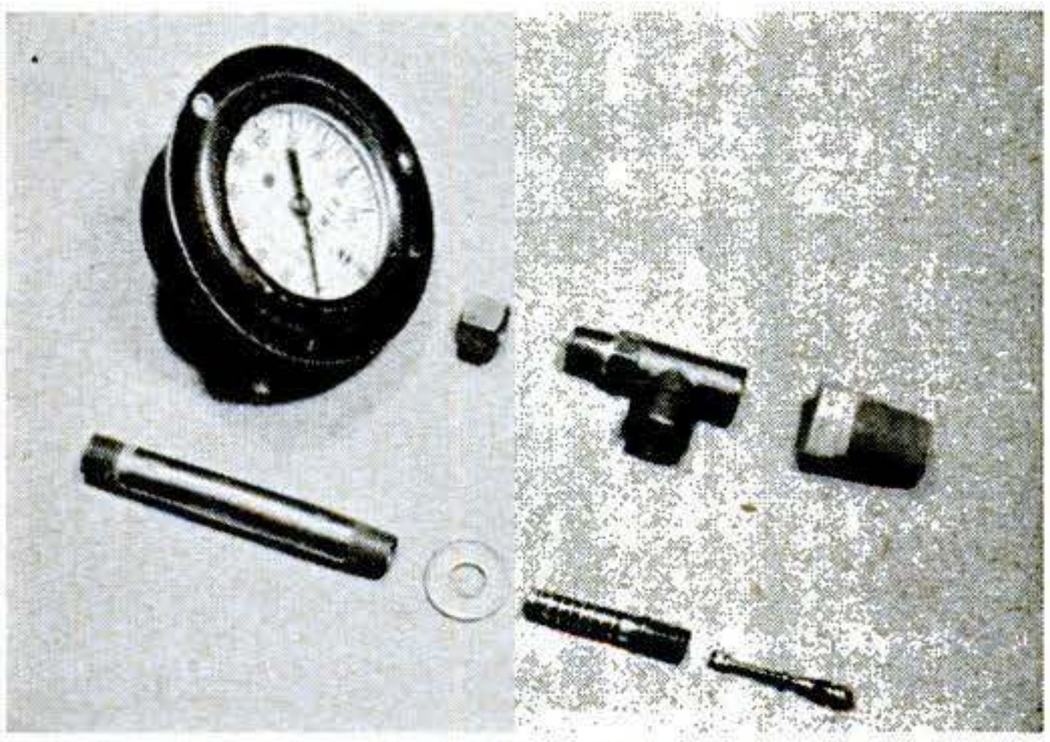




YOU CAN BUY OR BUILD A COMPRESSION GAUGE

Homemade gauge makes use of an air gauge with a maximum reading of 200 pounds. Hold it this way to take a compression reading, thrusting the rubber nozzle into the spark-plug hole. Photo sequence below shows how it's made.

Commercial gauge like this is available from mail-order or auto-supply houses for around $5. Valve in stem keeps needle at maximum reading until released. Long-stem gauges are made for engines with hard-to-reach plug holes.



1 Parts used include the air gauge, which happened to be panel-mounting type with a threaded pipe connection at rear rather than at side; a ⅛" pipe tee capped at one end (an elbow would have done), a rubber stopper, a short ⅛" pipe nipple, a washer, and a valve assembly taken from an inner tube. Grooved portion of valve body should be filed down as necessary to fit inside the pipe nipple.

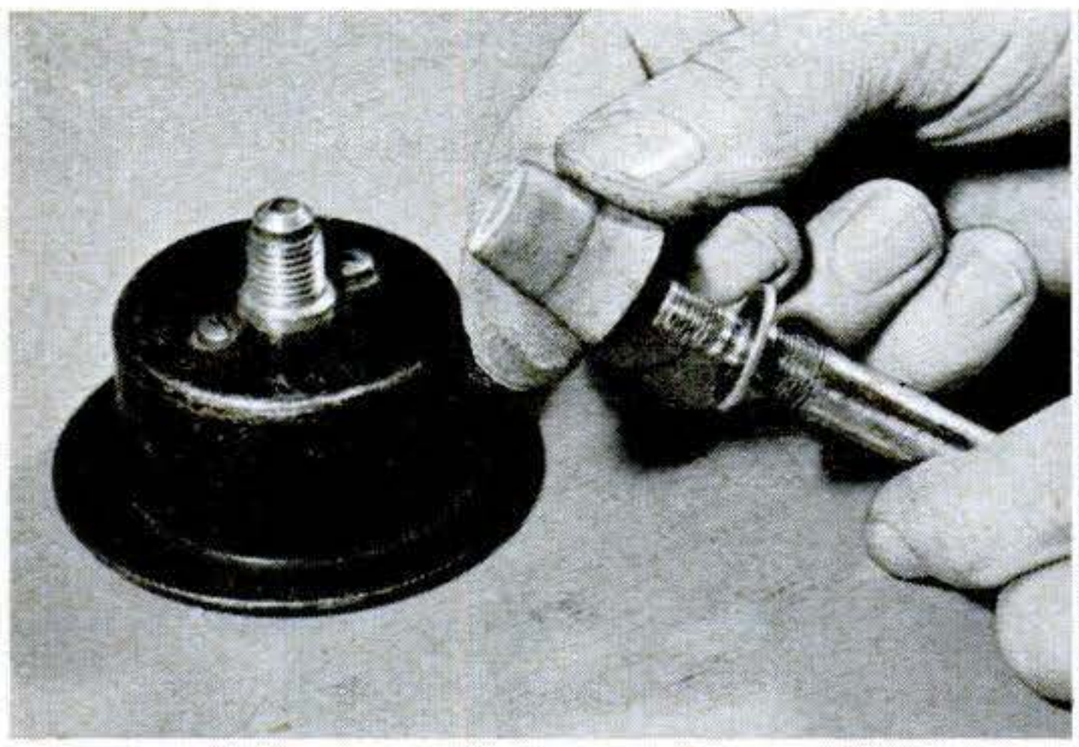
jumper, get someone to press the button on your signal.

Record the readings on a sheet of paper as you progress. Notice how much pressure is indicated for the *first* compression stroke of the piston. Jot down the maximum pressure developed by the cylinder—the reading beyond which the gauge needle will not move.

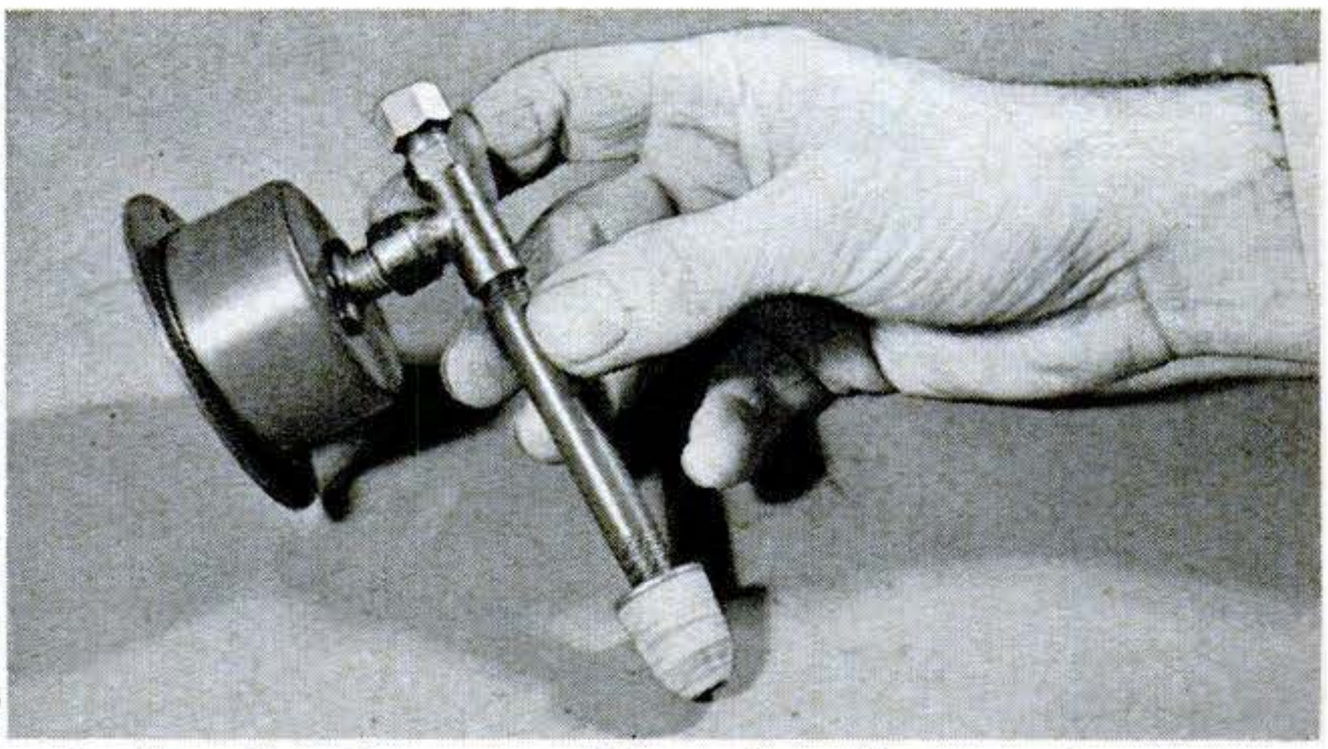
Release the pressure in the gauge by depressing the valve stem and test all cylinders the same way, writing down the maximum reading for each.

What the figures mean. Maximum cylinder pressure varies among different makes and models of cars. You can learn the normal cylinder pressure for your car from the manufacturer's specifications.

If the pressure in each cylinder is close to that recommended as normal, or if all



2 How it's assembled. Tin outside of valve body and inside of nipple near one end, insert valve body half its length and solder the two together. File down valve-body shoulder so washer can be pressed over it as above. Drill stopper lengthwise to turn up on valve.



3 Completed gauge. Notice how bottom of stopper has been shaped to fit into spark-plug hole. This can be done by filing. For a gauge with connection at side, run nipple straight without tee or elbow. Some engines require a longer stem, perhaps offset at angle.

Copyrighted material

cylinder readings are about the same (in case you don't know the recommended pressure), everything is probably fine.

If the pressure is definitely lower or higher than the recommended pressure, but there still is no variation of more than a few pounds among the cylinders, you still have no particular cause for worry.

But if one or more cylinders read decidedly low by comparison with other cylinders, all is not well. Suppose that one cylinder shows up low in a test of an eight-cylinder engine. Add together the pressures for the other seven and divide the total by seven to get an average. Subtract the low figure from the average. If the difference is greater than 10, you can expect to find trouble.

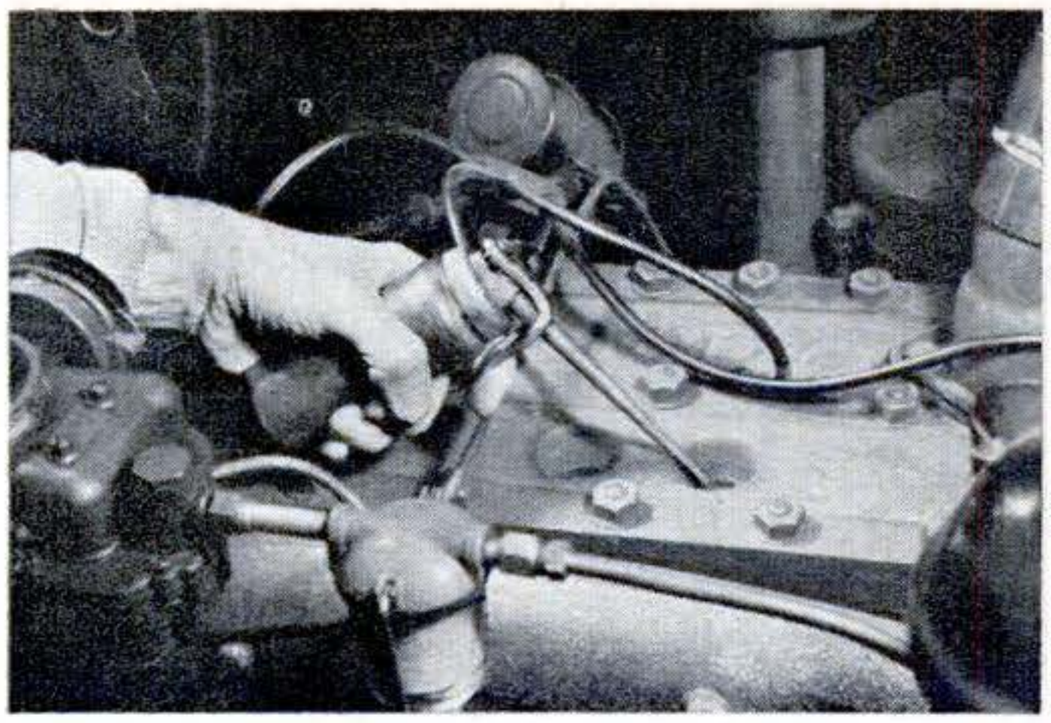
Now run a second test by squirting about a tablespoon of medium or heavy engine oil into the spark-plug holes of the cylinders which showed decidedly low pressures on the first test. Turn the engine over a few times to draw oil down around the pistons and act as a compression seal.

Using the gauge as you did before, take a pressure reading of each cylinder into which you squirted oil.

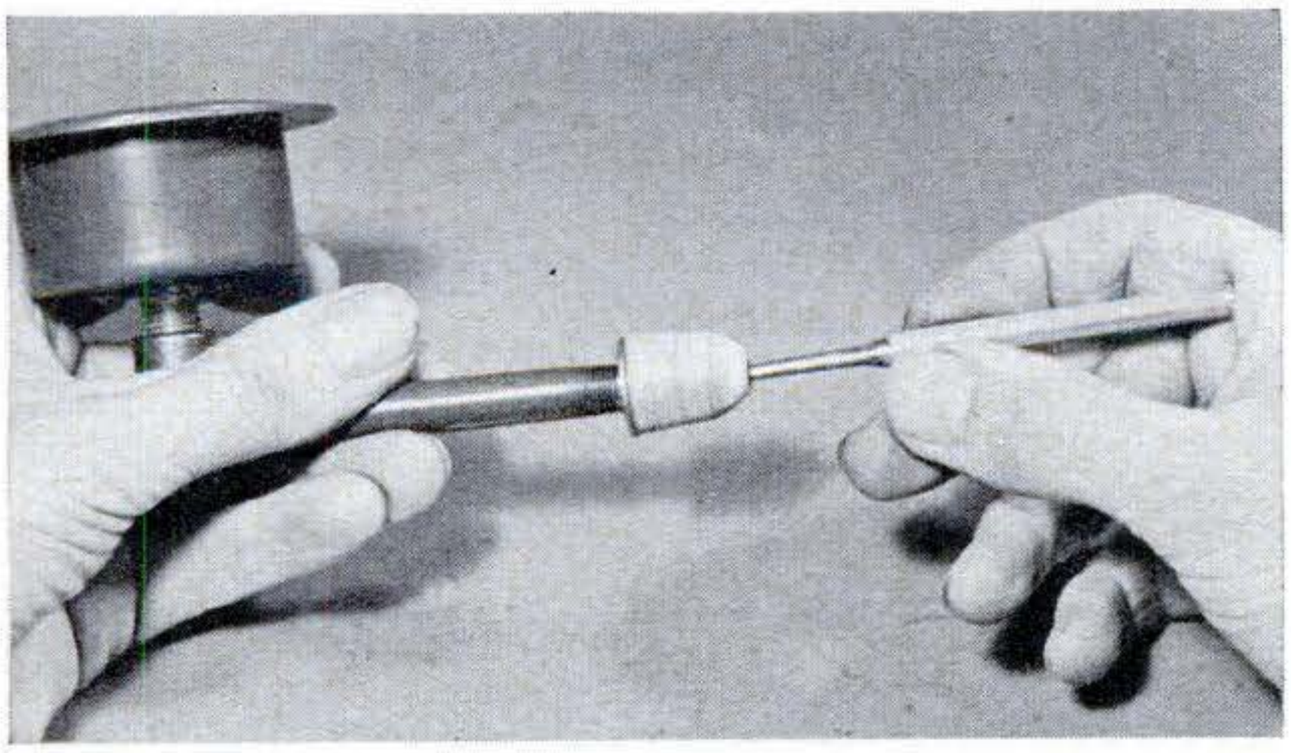
Interpreting the figures. Now by studying and comparing the pressure figures, you can learn a lot about the engine.

If on the dry test, the pressure in a cylinder went up only a piddling 15 pounds or so on the first piston stroke and then, on succeeding strokes, built up slowly to the maximum, you can suspect that the valves were sticking or the valve seats are in poor condition.

Adding oil to a cylinder nearly always causes *some* pressure increase. If the pressure in a low cylinder jumps close to the average on the wet test, you know that compression was being chiefly lost past the piston. This may be the result of worn rings, gummed rings sticking in their grooves, a scored cylinder wall or a worn piston. Sometimes the use of a solvent will restore compression by freeing stuck rings.



Squirting oil into cylinder provides seal for second set of compression readings. Crank engine a few times to distribute oil.



4 **Slender tool** depresses valve core to release air after gauge has been used. Test the gauge for air leaks on a service-station air hose. If gauge is to be used to measure compression in comparison with specified pressure, check it against a standard gauge.

If a low-reading cylinder comes up only slightly when oil is added, the trouble probably lies in the valves or the head gasket. Adjusting tappet clearance or tightening the head bolts may cure the trouble. Or a valve-grinding job may be required.

If the oil causes a marked increase in pressure but the reading still is decidedly below average, some of the leakage is past the piston, some through the valves or around the gasket.

Two side-by-side cylinders showing low pressures suggest that a gasket leak is located between them. Sometimes tightening the head bolts will bring the pressure up.

Higher pressures than those specified for an engine may indicate that large deposits of carbon in the combustion chambers or on the piston tops are reducing combustion-chamber volume. Too much crankcase oil working into cylinders also can cause a pressure increase. Adding more oil through the plug holes, therefore, could not be expected to increase the pressure. If the engine is pinging, try retarding the spark or using a gasoline of higher octane rating.

Compression tests depend on a good wear-in of the piston rings. So they may not be accurate on a new engine, one recently rebuilt or one having new rings.—*Walter E. Burton, Akron.*

Next Month: What a timing light can tell you about your car's ignition.

Copyrighted material

How to Panel with Plywood

Natural-wood walls, once a rich man's luxury and a carpenter's headache, can now be put up in a few hours with only a hammer and saw.

By Darrell Huff

IF YOU have a good wall you want to show off, or a bad one you want to cover up, plywood panels may be the answer. The big, handsome sheets go right up over an old wall or ceiling and need only nails, a hammer and enough know-how to get the two together at the right time and place.

They'll hide cracked or falling plaster by simply putting it all behind them, give a fast facelift to dingy paint or wallpaper, or add a striking decorative touch to a dull eyesore.

Once up, they take little or no maintenance and eliminate the endless patching, painting and papering that other walls require. Reasonably cared for, they'll outlast you.

They go a long way, so you can get a lot of effect for a relatively little money. A few sheets around a fireplace may be all you need to liven up an otherwise plain living room. A few more will convert a dreary basement into a warm, pleasant playroom, an unused attic into a den or extra bedroom. A paneled ceiling will make people look up instead of downcast.

Choosing a plywood. Once available in only a few types, plywood panels can now be had in nearly all the woods of the forest—plus a few special treatments that never grew anywhere.

The most common and least costly are the rotary-cut softwoods like Douglas fir, knotty pine, cedar and redwood. They have irregular, rather prominent grain and run around 30 cents a

Wood grain stands out in new ¼" textured plywood called Sea Swirl. Here 4' by 8' sheets were ripped into 24" widths, separated by strips of plain wood 1" wide.

Precut plywood planks are 16¼″ wide to match stud spacing and up to 8′ long to fill full wall height. Called Plankweld, they come in birch, oak, knotty pine and mahogany. Panels can be put right up over old walls, are held on by invisible metal clips that are nailed to studs. Grooved edges interlock for strength, make slight lap joint.

square foot for the ¼″ thickness. They also come with vertical grain that is much quieter.

Pocketbook permitting, you can go into the more expensive—two or three times more—hardwoods. These are veneered plywoods that can be had in a number of varieties from birch, oak, walnut and mahogany to the more exotic korina, avodire and rosewood.

There are several textured plywoods that add a striking touch to a plain surface. Striated Weldtex has fine grooves cut in the face. One of the newest specialties is WedgeWood, a wire-brushed hemlock that makes the grain stand out in relief. Another is a fir plywood called Sea Swirl that has the soft growth removed to give the appearance of a split shake. Then there's Plyweave, which has a pattern of broken parallel lines imposed on either fir or redwood.

All of the textured types hide nailheads well and minimize occasional misfits between panels. You can also get a plastic-paper-faced plywood made especially for painting.

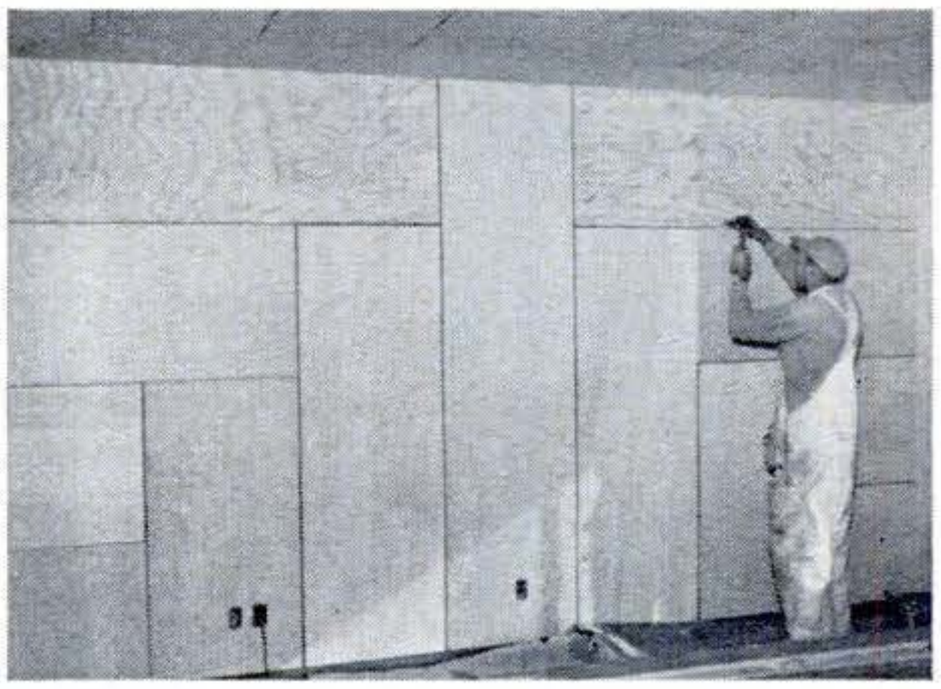
Precuts save work. One of the newer kinks in plywood are the narrow planklike panels called Plankweld. These are 16¼″ wide to match the usual spacing of wall studs and come prefinished to save work. Costing around 55 cents a square foot, they are more expensive than the standard 4′ by 8′ panels, but are simpler to use since they eliminate much of the cutting, fitting and bruting around of the big sheets.

Precut squares of 5/16″ striated Weldtex are another work saver. These come in 12″, 16″ and 24″ sizes and are especially effective if put up with the direction of the grooves alternated, producing a checkerboard effect. Many of the regular plywoods are also available in nonstandard sizes like 3′ by 4′, 4′ by 4′,5′ by 7′ and 3′ by 6′.

Using the big sheets. These, on the whole, are the most economical because of their size and cover a lot of area fast for the same reason.

The common size is 4′ by 8′, but for walls

Big sheets are made to look like small, individual planks by scoring horizontal lines into face of panels. Table is plywood, too, with glass top to protect it.

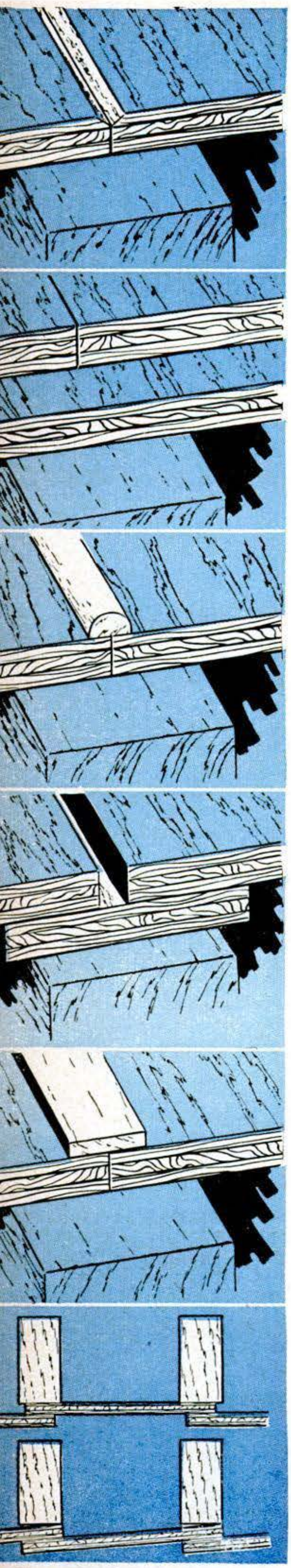


Unusual arrangements like this not only provide interesting effects but are a fine way to save waste by permitting use of odd-size scraps normally discarded.

Looking at the ceiling is easy with this checkerboard arrangement of 5/16″ Weldtex squares. Squares come in 12″, 16″ and 24″ sizes, cost around 30 cents a square foot.

Raised-panel effect is obtained by first nailing up narrow backing strips and then bridging them with big panels nailed on top. Space panels about 1″ apart.

Copyrighted material



V joint, one of most common types, is made by beveling edges of meeting panels. Use block plane or have mill do this for you. On hardwood plywoods, use shallow V to avoid exposing different-colored wood under veneer. Nailing into bevel will help hide nailheads.

Butt joint looks simple, is actually hardest to make because meeting edges must fit perfectly. Use it only on most costly veneered plywood where other joints might be objectionable.

Half-round molding is cheap, easy to put on and hides nailheads and an occasional sloppy fit between panels. Fine for light-colored softwoods; not preferable with darker hardwoods.

Gap joint, one of newest and most modern, leaves space between panel edges. Strip of matching plywood is nailed on first to back up gap. Gap should equal wood's thickness.

Batten joint is similar to half-round but uses thin wood strips to cover seams. It has added advantage that strips can usually be cut from solid stock to match dark veneers.

Lap joints accentuate seams instead of concealing them. Recessing every other board (top left) creates raised-panel effect, is modern, formal. Conventional shingle-type lap (bottom left) gives rugged, rustic appearance. Both types of joints cut edge nailing in half.

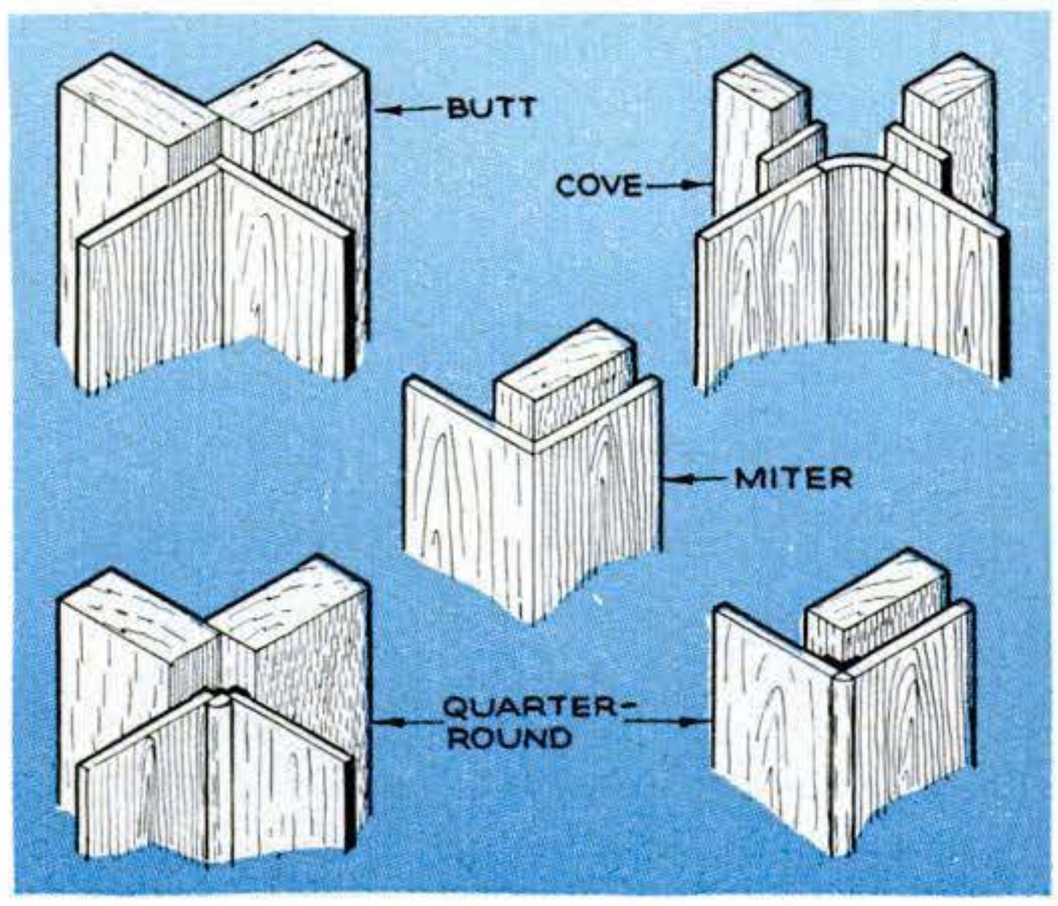
higher than 8′ you can get some panels in 10′ lengths. These must be trimmed, however, and may result in considerable waste. You can save money by hiding small gaps behind baseboards and moldings, as shown in one of the sketches.

For paneling over existing walls, the ¼″ plywood—the thinnest and cheapest—is sufficient (in a few types, 5/16″ is the thinnest). If you want to combine doors, cabinets and other built-ins with your paneling, you'll find there are ¾″ sheets in woods to match most of the ¼″ types. These are expensive, though, and for big jobs you may find it more economical to build forms first of cheap ½″ structural-grade plywood and then cover them with a ¼″ facing like a veneer.

Over bare studs, the ¼″ sheets alone are too thin and must be backed up with ½″ structural plywood nailed on first.

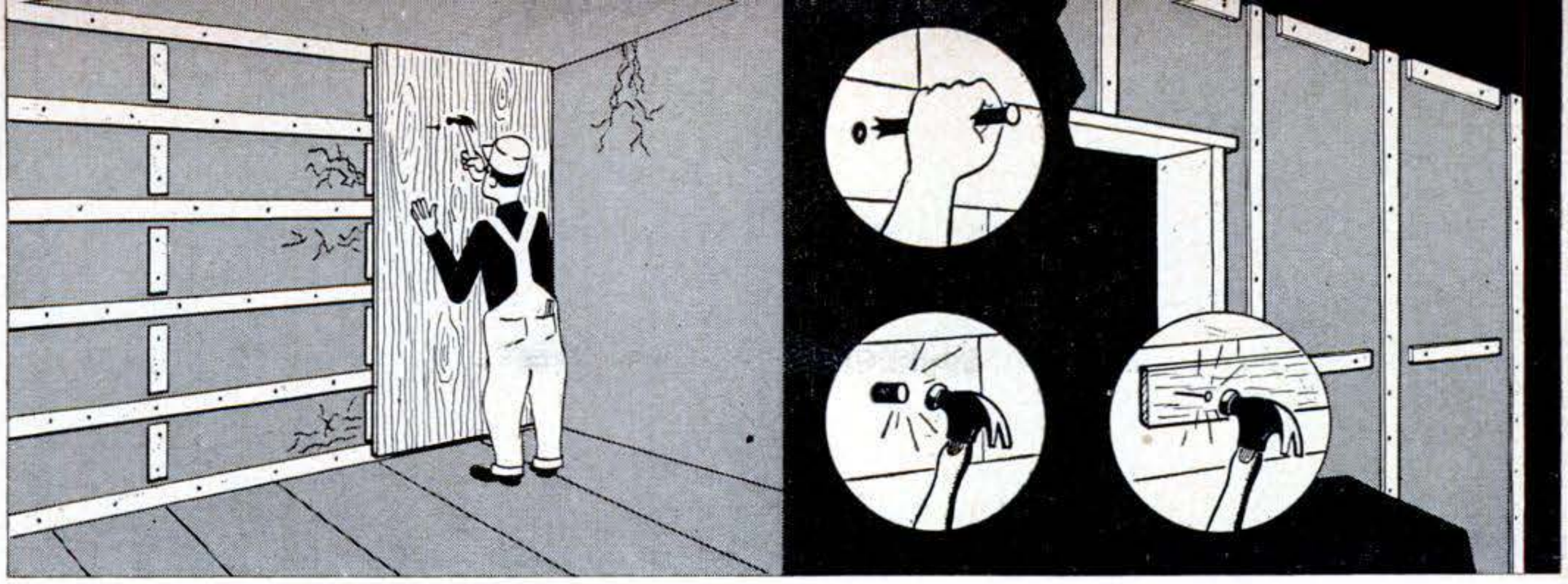
Putting it up. Where existing walls are in good condition, you can put the panels right up over the old surface and nail through it into the studs. On plaster walls, you can locate the studs by tapping (they give a solid sound, the spaces in between a hollow one) and by test pokings with a nail or small drill. On dry walls (plasterboard and wallboard), you can usually find the studs by simply prying off the baseboard molding and noting the points where the panels have been nailed on.

On walls that are badly out of line or where plaster is cracked, you may have to put up a light framework of furring strips, as shown, to cover the irregularities.



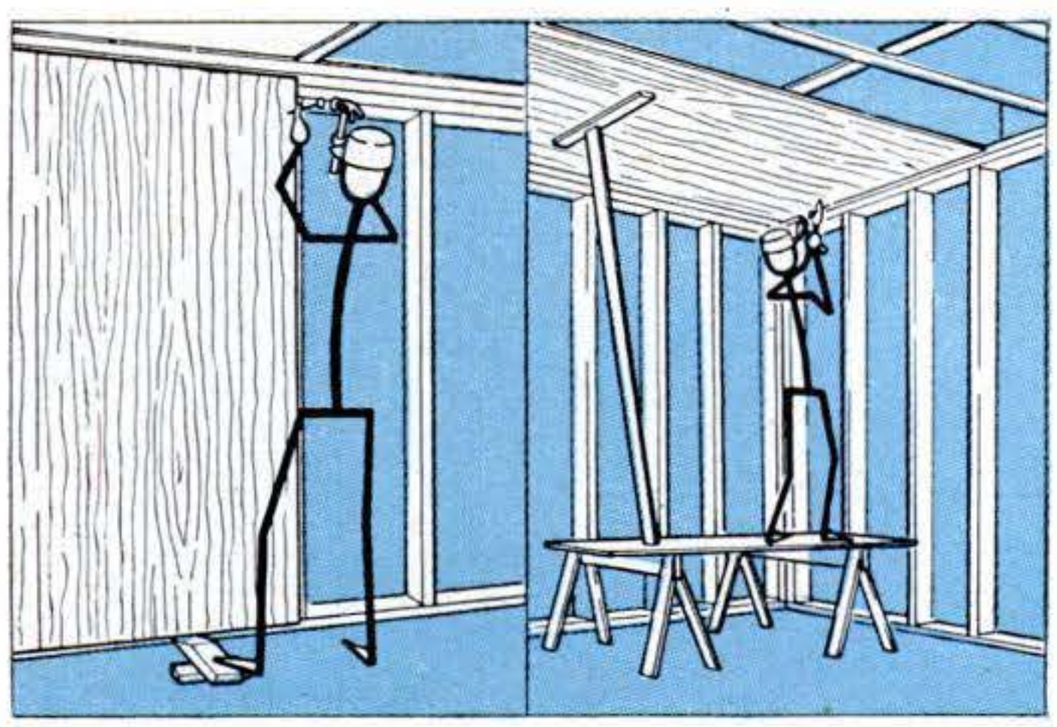
Corner joints can be as plain or fancy as you like. Easiest—and quite acceptable—is simple butt joint, used most on internal corners but also fine for external ones if slightly rounded to avoid splinters. Quarter-round, cove and miter are also common but trickier to fit.

Copyrighted material

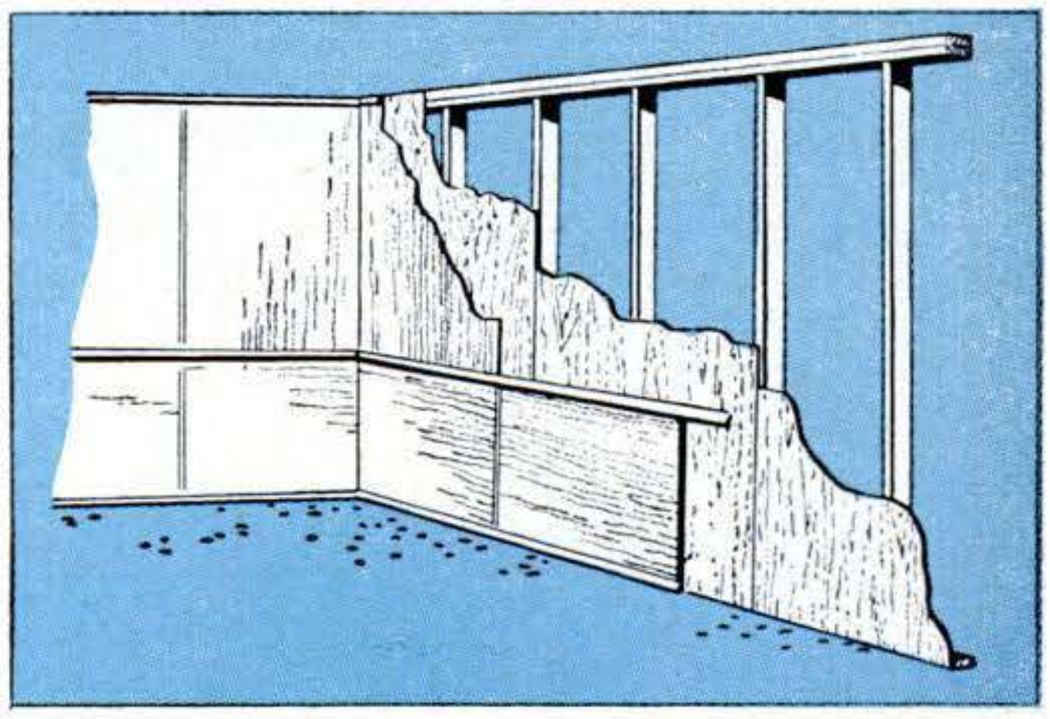


Framework of 1″ by 2″ furring strips provides smooth backing for paneling over walls that are badly cracked or out of line. They must also be used where edges of panels will not fall on studs. Nail horizontal strips into studs, starting at ceiling and floor and spacing others every 16″ in between. Then add vertical filler strips wherever edges of panels come.

On masonry walls, furring strips are used to give nailing surface for panels. Fasten strips to concrete with cut steel nails, about 12″ apart. If concrete is too hard or nails won't hold, use method shown above. Drill hole first with carbide-tip drill, pound in oversize wood peg, then nail furring strip into peg. Or you can cement patented furring-strip fasteners on the masonry.



Foot pry (left) jams panels tight against ceiling, frees hands for hammering. T support (right), made of stick with crossarm at top, provides extra hand to help hold up big sheets.



On new walls, thin ¼″ outer plywood is backed by ½″ structural plywood nailed to studs first. Backing adds strength, gives nailing surface for panel edges that don't fall on studs.

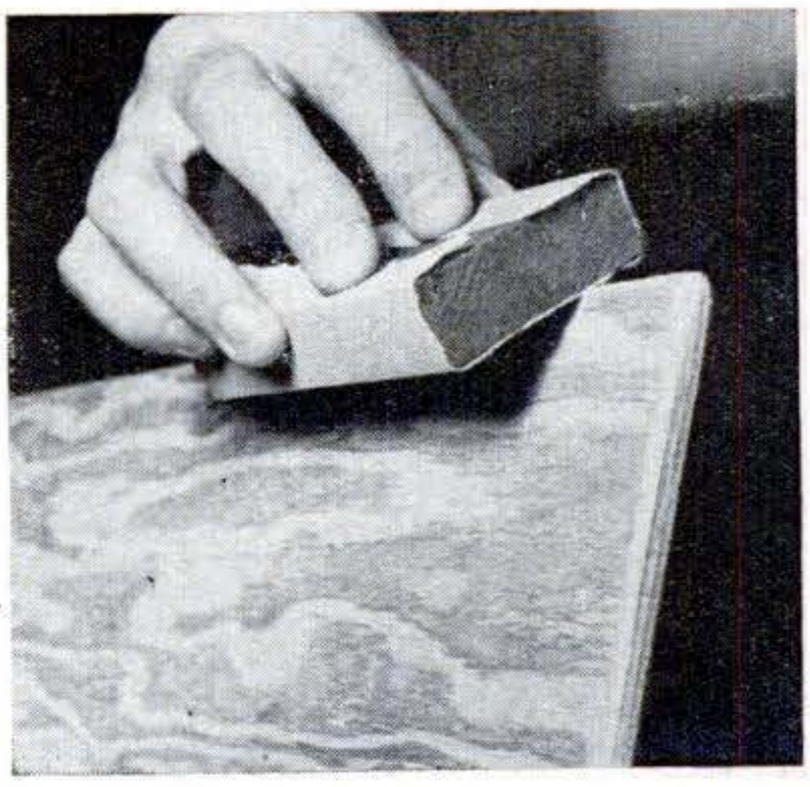
Furring strips are a must wherever the panels are less than full ceiling height, as in a pattern of small squares, since the studs alone would provide no cross pieces to hold the horizontal joints. A sketch shows how the same method is used on masonry walls.

Keeping out moisture. Over exterior walls, you'll have to take some precautions against dampness that deteriorates the wood.

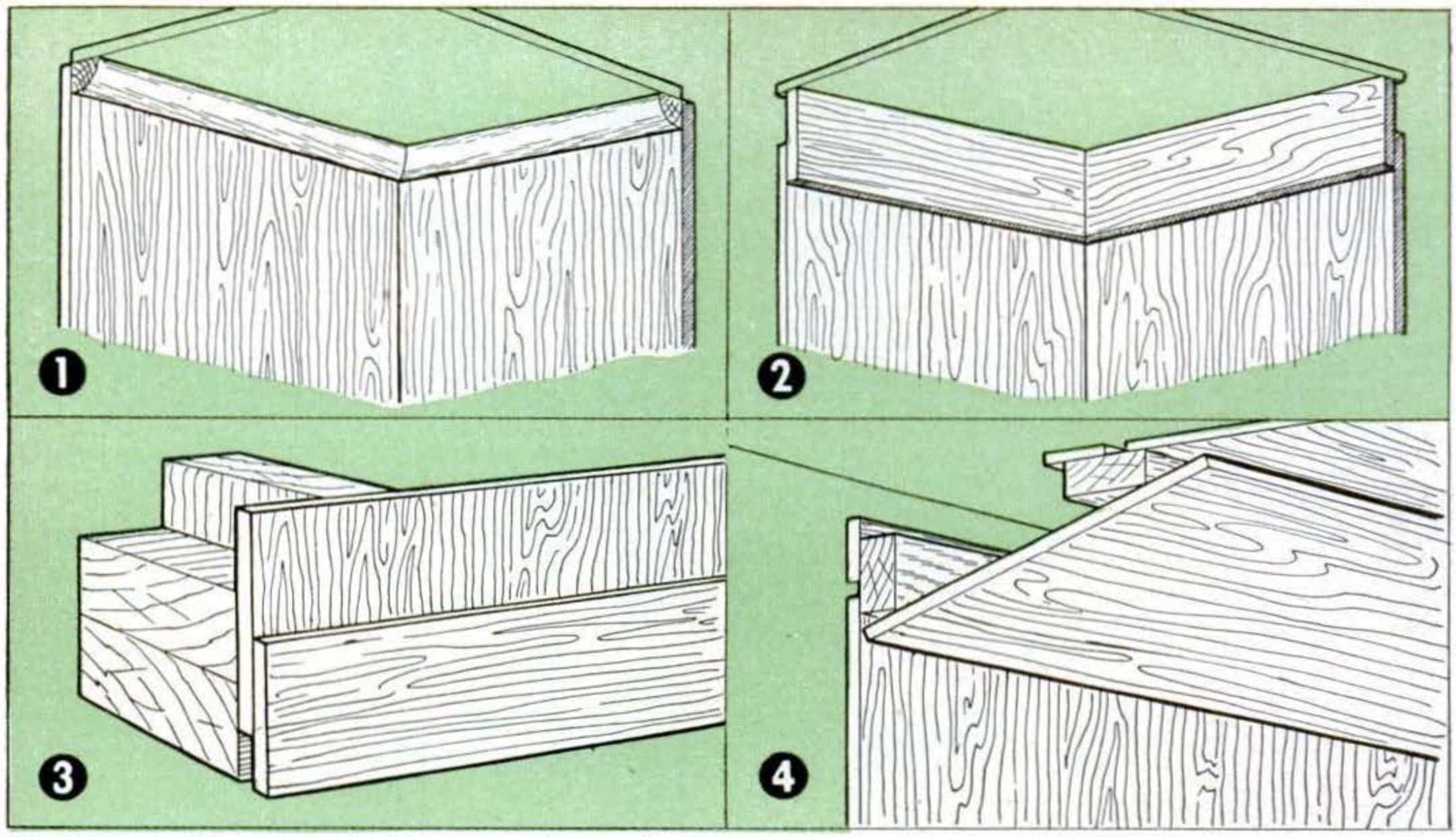
On plaster or masonry that is dry, it is enough to seal the back of the plywood with a prime coat of paint. Where there is evidence of moisture, you should seal the wall first with white waterproof cement paint. Or you can tack asphalt-saturated paper to the furring strips, giving it a 2″ lap. Also back-prime the panels first.

If the plywood you want to use comes in

Paneled ceiling (left) is strong, handsome, easy to put up. Here 4′ by 8′ sheets of ¼″ WedgeWood were cut in half to ease handling and create checkerboard of 4′ squares. Light sanding of edges (right) makes attractive V joint. Nail panels to rafters, either directly, as in new construction, or through existing surface on old ceilings. Rafters are usually 16″ apart.



Copyrighted material



Finishing off at top and bottom of panels is most easily done with quarter-round molding (1). Large gaps can be covered with strips of the same plywood, ripped from leftover scraps, which also permit exact matching where molding may not (2 and 3). Cornice-type ceiling molding (4) is easy to build, hides a lot of bare area, can be modified later to take fluorescent lighting. Occasionally no molding is used at ceiling, but panels must fit perfectly.

a waterproof exterior grade, you can head off moisture by simply using that.

Hiding the joints. It is impossible to conceal a joint completely since even the most carefully butted panels will have a hairline seam and may open up to show a larger crack later on. Because of this, most people prefer an obvious joint to a half-hidden seam.

There are two ways you can do this. You can cover the joint with narrow wood strips or deliberately expose them by overlapping the panels, beveling their edges, or leaving a slight gap between them.

For the fancier hardwoods, there are special veneer-faced aluminum moldings for finishing off joints and edges. You simply nail the moldings in place and fit the panels.

PLYWOOD PANELING

These are the grades of interior Douglas fir plywood. "A" grade veneer is the finest quality. "B" grade is smooth and paintable but may have small knots and slight defects. "C" has tight knots, small knotholes. "D" permits larger knotholes, pitch-pockets, splits, patches. Grade names are from Douglas Fir Plywood Association.

Name	*Face*	*Back*	*Uses*
Interior A-A	A	A	Anywhere both sides will show, especially where natural finishes are used: cabinet doors, built-ins, furniture.
Interior A-B	A	B	More economical alternate for A-A; just about as good, particularly if one side is painted or doesn't show much.
Plypanel	A	D	Standard for paneling where only one side is to show, as on walls and ceilings.
Plybase	B	D	Mostly used as backing material for paneling, but also makes a good low-cost wall or ceiling.
Plyscord	C	D	Unsanded. Used mainly as backing or sheathing.

FOR YOUR *POPULAR SCIENCE MONTHLY* INFORMATION FILE

Copyrighted material

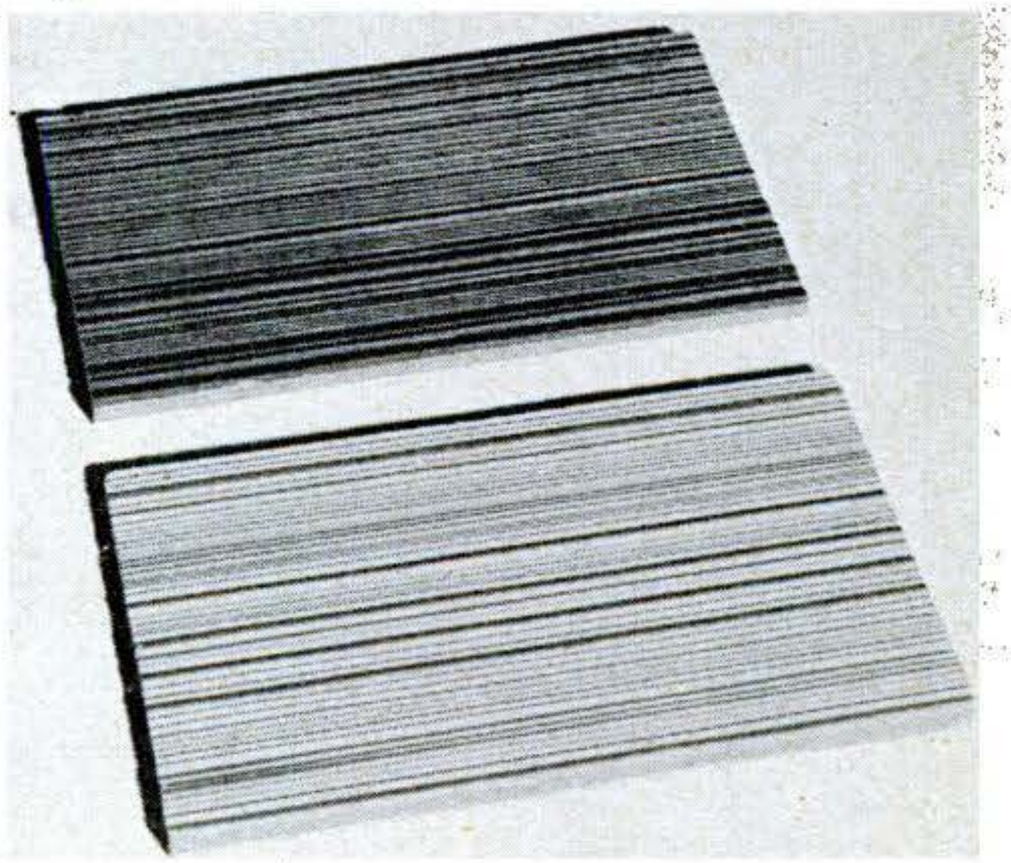
Arranging the panels. There are several tricks for laying out panels to save cutting and provide a pleasing pattern of joints. To avoid intricate fitting around doors and windows, full panels are usually started on either side of the openings and the smaller spaces filled in between. On plain walls, it's best to center the pattern so that any fractional panels will be the same at each end.

You can keep all joints vertical—the simplest arrangement—or use the tops and bottoms of windows as guide lines for horizontal joints.

Nailing plywood. For ¼″ paneling, either 4-penny finishing nails or ¾″ No. 19 brads will do, the latter being a little lighter but neater-looking. Use 6-penny finishing nails on the ⅜″ and ½″ thicknesses and 8-penny on the ¾″. Where you must nail into studs through an existing plaster or wallboard surface, be sure to use nails that are at least two sizes larger in each case. Nails should be spaced every 6″ on the edges of a panel and every 12″ in between.

Finishing plywood is the other big half of the job, but it needn't be hard if you know the tricks. In a coming issue PSM will tell you about the types of finishes and how to use them.

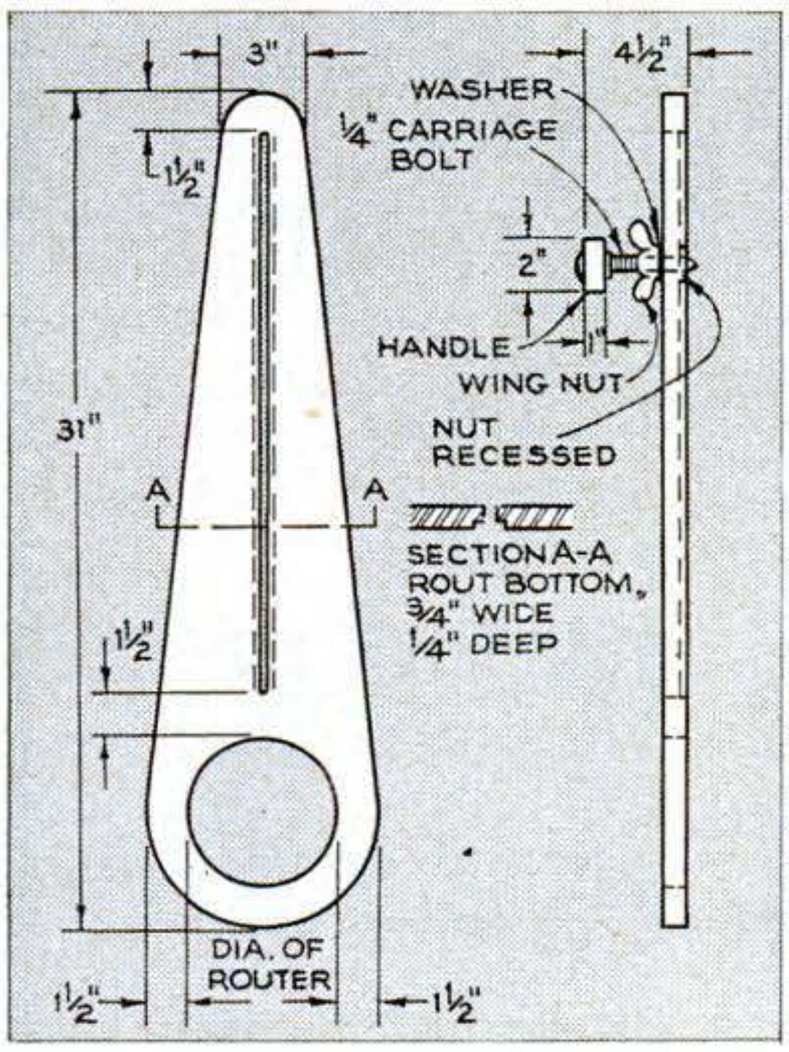
Plywood Finished in Two Colors

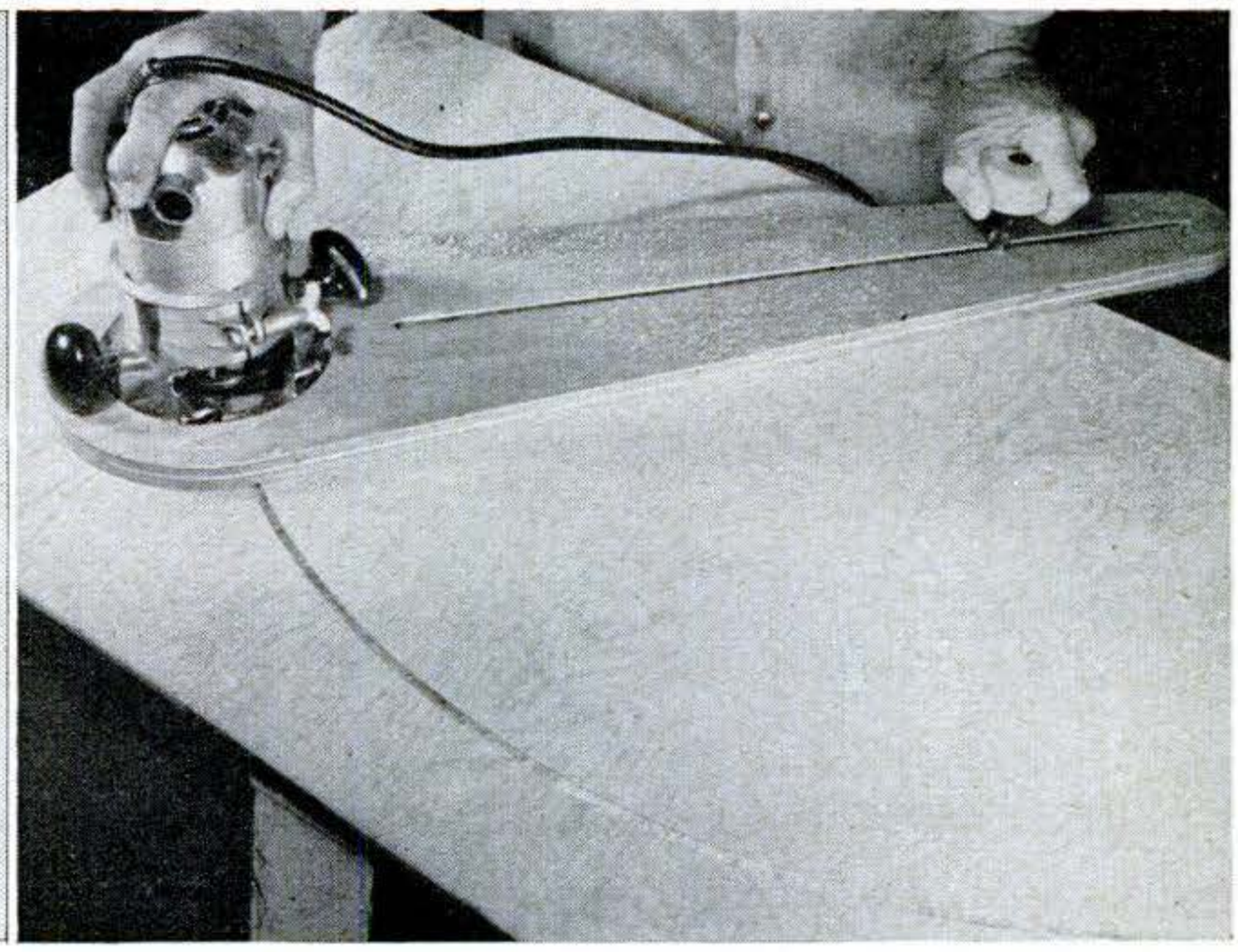


Look at these panels of striated Weldtex plywood from one angle and you see one color. Look at them from the opposite angle and you see another color.

Secret: The first color is sprayed on at an angle of 30° to the wood from one side. When this is dry, the second color is sprayed on at the same angle from the other side. Thus the ridges in the wood are one color on one side, another on the other. Looking at the panels straight ahead gives a combination of the two colors.

Jig Holds Portable Router for Making Circular Cuts





THIS routing jig adapted to your portable router will enable you to cut perfect circles of any radius within the range of the slot. It is just the thing for cutting grooves in a round table top for inlaying. By making several passes with the router, adjusting the depth of cut each time, you can cut a perfect disk out of a panel.

The jig is made from ¾″ plywood. The slot is cut down the center with the router itself before cutting the jig to shape. A hardwood knob is mounted on a pointed bolt that can be slid along the slot and locked with a wing nut to adjust the radius. Lacking a lathe, the bolt point can be filed.—*Walter Haase, Hartford, Conn.*

Copyrighted material

One Evening Shop Projects

MAGAZINE RACK

The back of a door is a handy but out-of-the-way spot to keep magazines. This rack can be made in multiples to cover an entire door. Heights of the side pieces should be modified to suit different-sized magazines. Quickest way to form the curved sections is to use a bandsaw or jigsaw to cut stacked wood. Assemble with glue and brads and finish to match the door.—*Hi Sibley, Nuevo, Calif.*

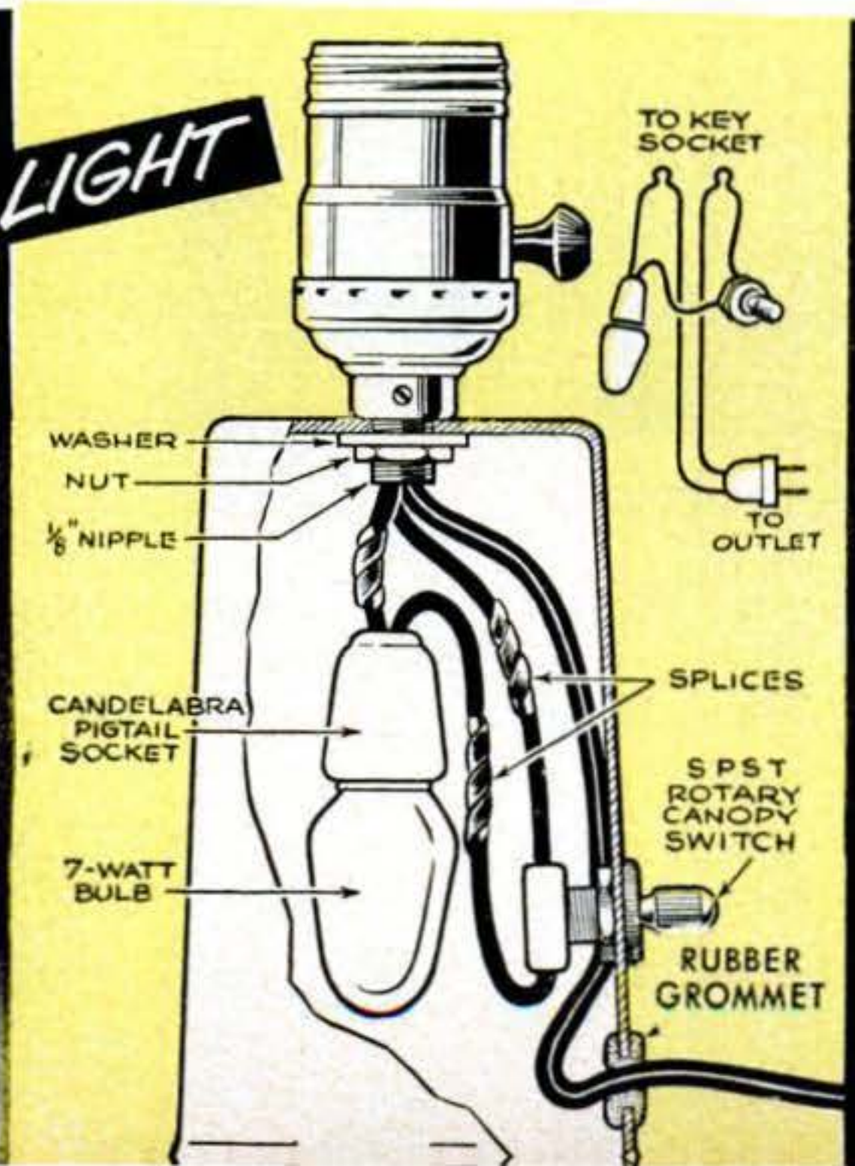
Bright light for reading, soft light for sleeping, colors to match the bedroom—all yours for an evening's work without one lick of a paintbrush. The two-way lamp below is a quick-and-easy assembly job.

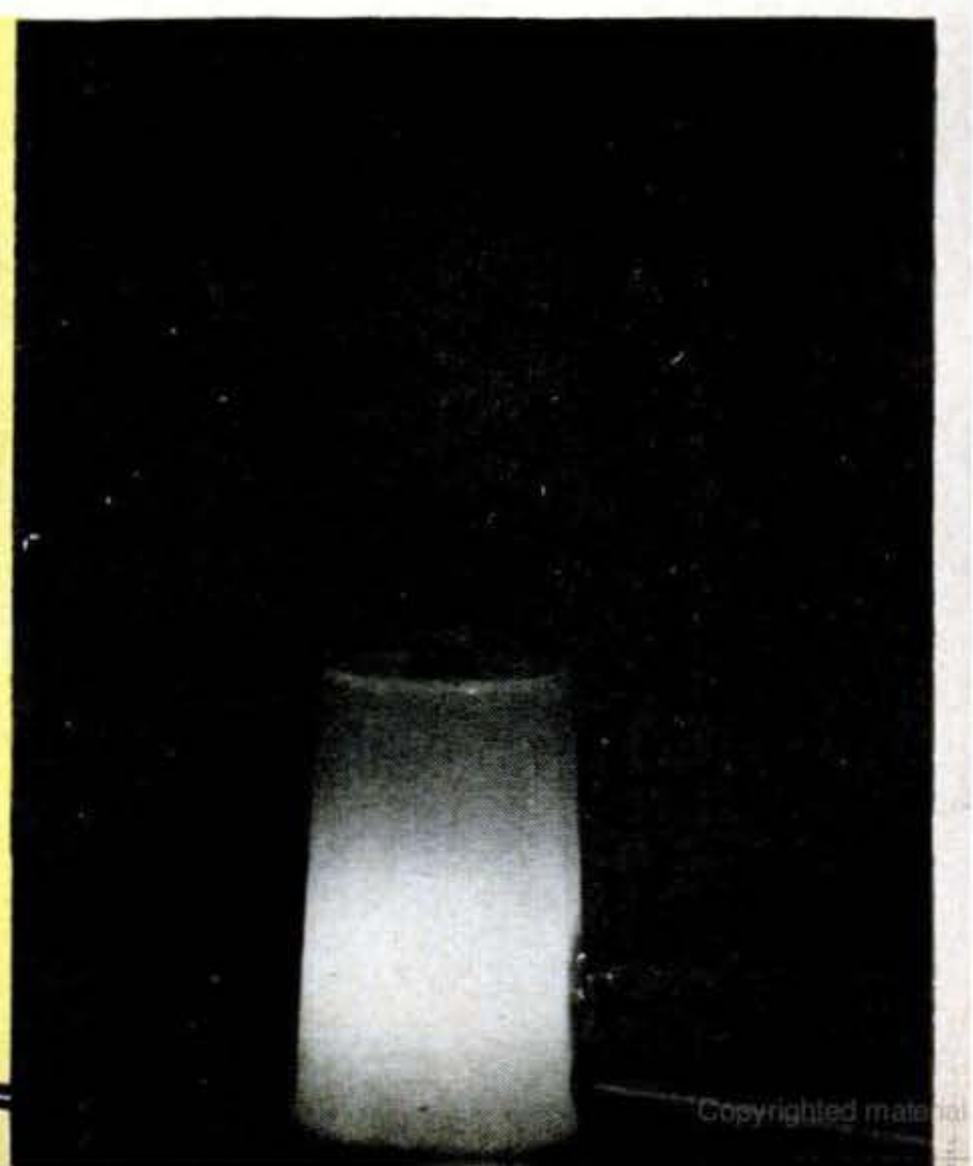
A colored plastic tumbler 5″ high serves as a base. It houses a seven-watt candelabra bulb in a pigtail (Christmas-tree) type of socket. This lamp shines through the plastic, giving enough light for reading a clock or finding your way about, as shown in photo at right below.

Drill holes for the cord, upper socket mount and switch with care to avoid cracking the plastic. Large drills are prone to grab; it may be safer to drill ¼″ holes and file them to size. A standard key socket is mounted on top of the inverted tumbler with a ⅛″ pipe nipple and lock nut.

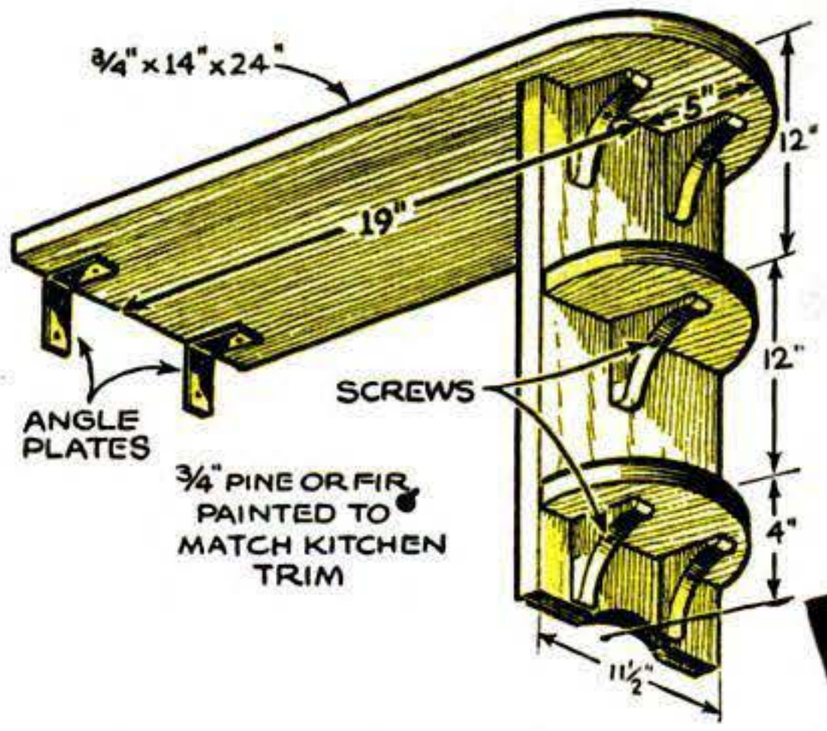
Solder all splices if possible, and bunch the wires with tape to make the candelabra socket hang free in the center. The plastic shade simply clips on the bulb.—*Arthur Trauffer, Council Bluffs, Iowa.*

NIGHT LIGHT





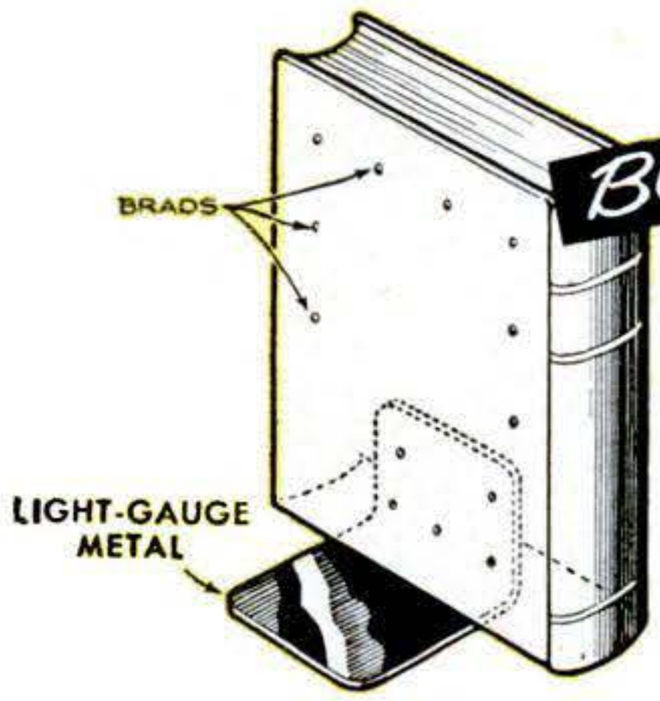
Copyrighted material



SNACK TABLE

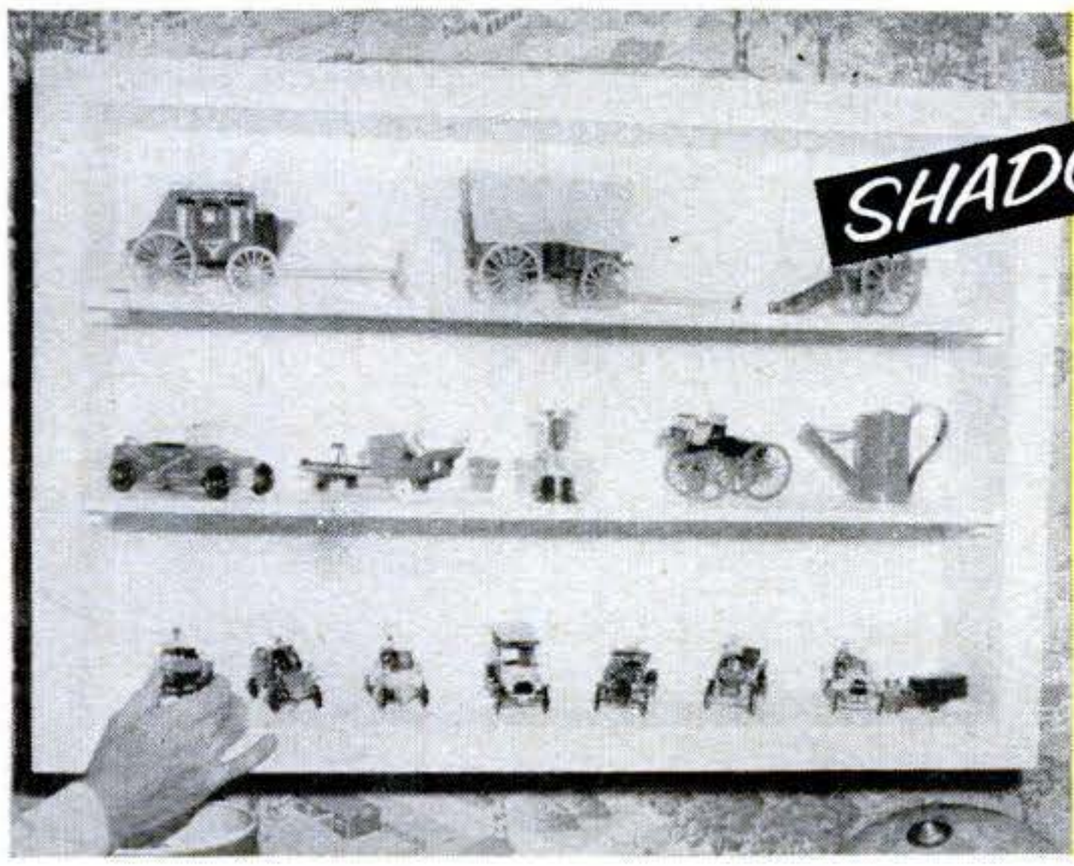
For after-school snacks or a hurry-up breakfast for Dad or Junior, this table in the kitchen fills the bill. Construction is simple. It can be made of ¾" plywood or of glued-up flat stock. Fasten it to a kitchen wall or cabinet side with angle brackets. The waste left from sawing the rounded corners was utilized to make the supporting brackets for the shelves.—*George Reiser Jr., NYC.*

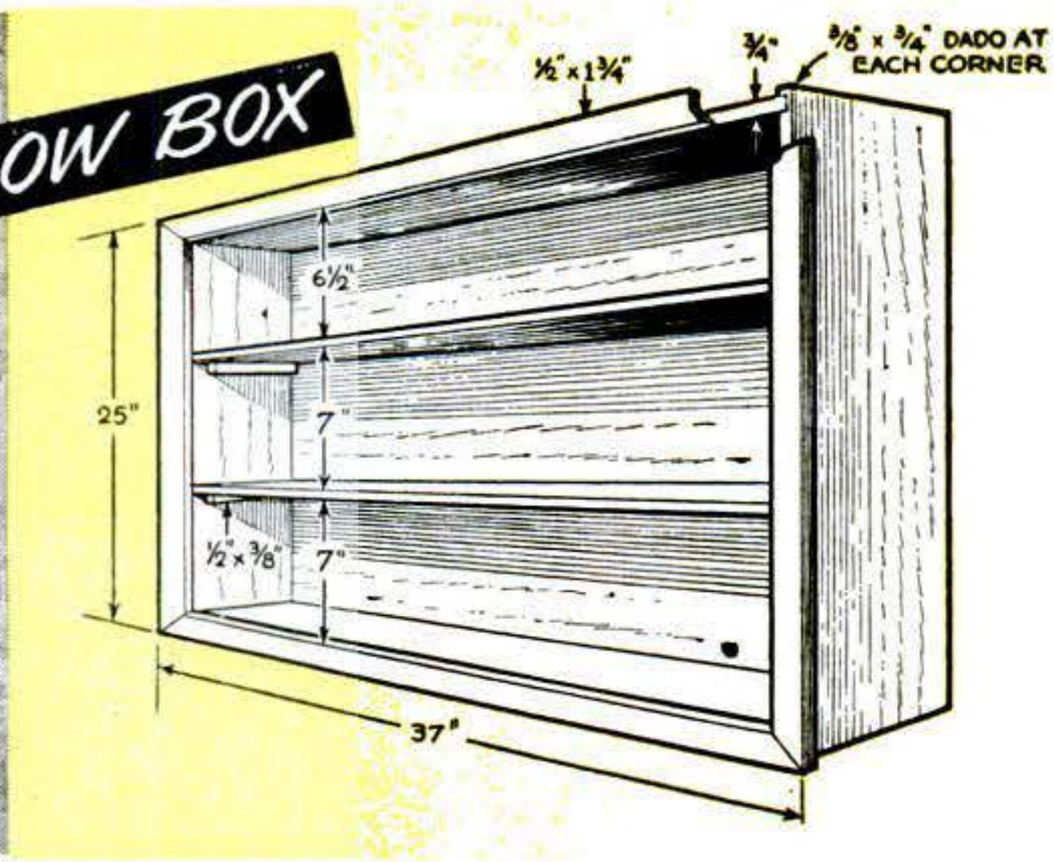
BOOK ENDS



Two discarded books and a pair of concealed brackets will make invisible book ends. Bend back the covers of each book and drive brads through the pages to form a solid mass. Attach the brackets, made of any light-gauge metal, by driving more brads into the pages through holes drilled in the metal. Glue the covers back in place and your novel book ends will mystify your friends.—*Frank Shore, NYC.*

SHADOW BOX





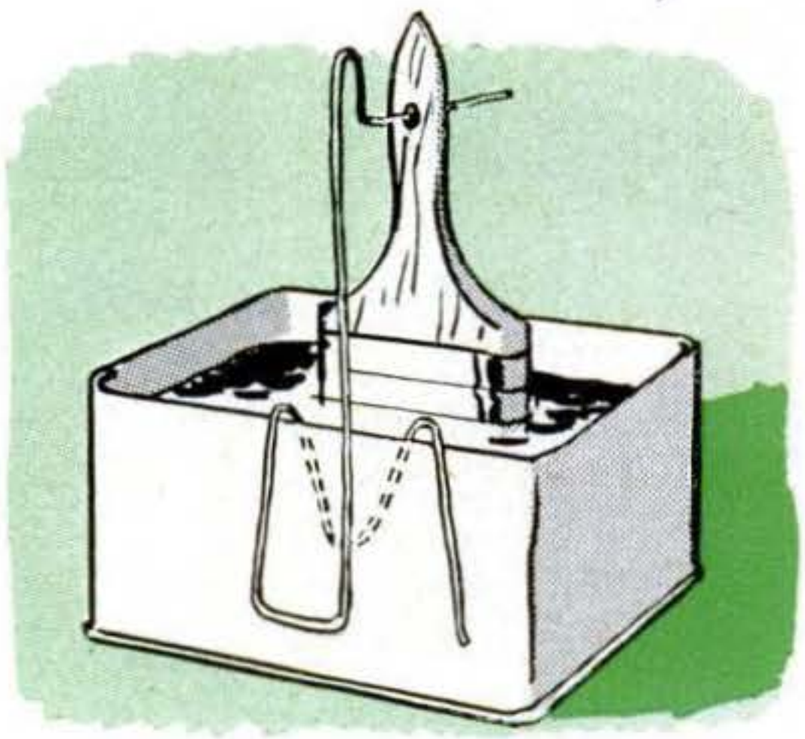
Models, ceramic figures or other hobby collections can be attractively displayed in a trim white shadow box. Cut and rabbet the parts and assemble with glue and brads. Finish with enamel and mount the box on a wall with picture hangers. For rooms finished in rustic style, use a scalloped frame—*Walter Haase, Hartford, Conn.*

Copyrighted material

KEEPING THE Home SHIPSHAPE

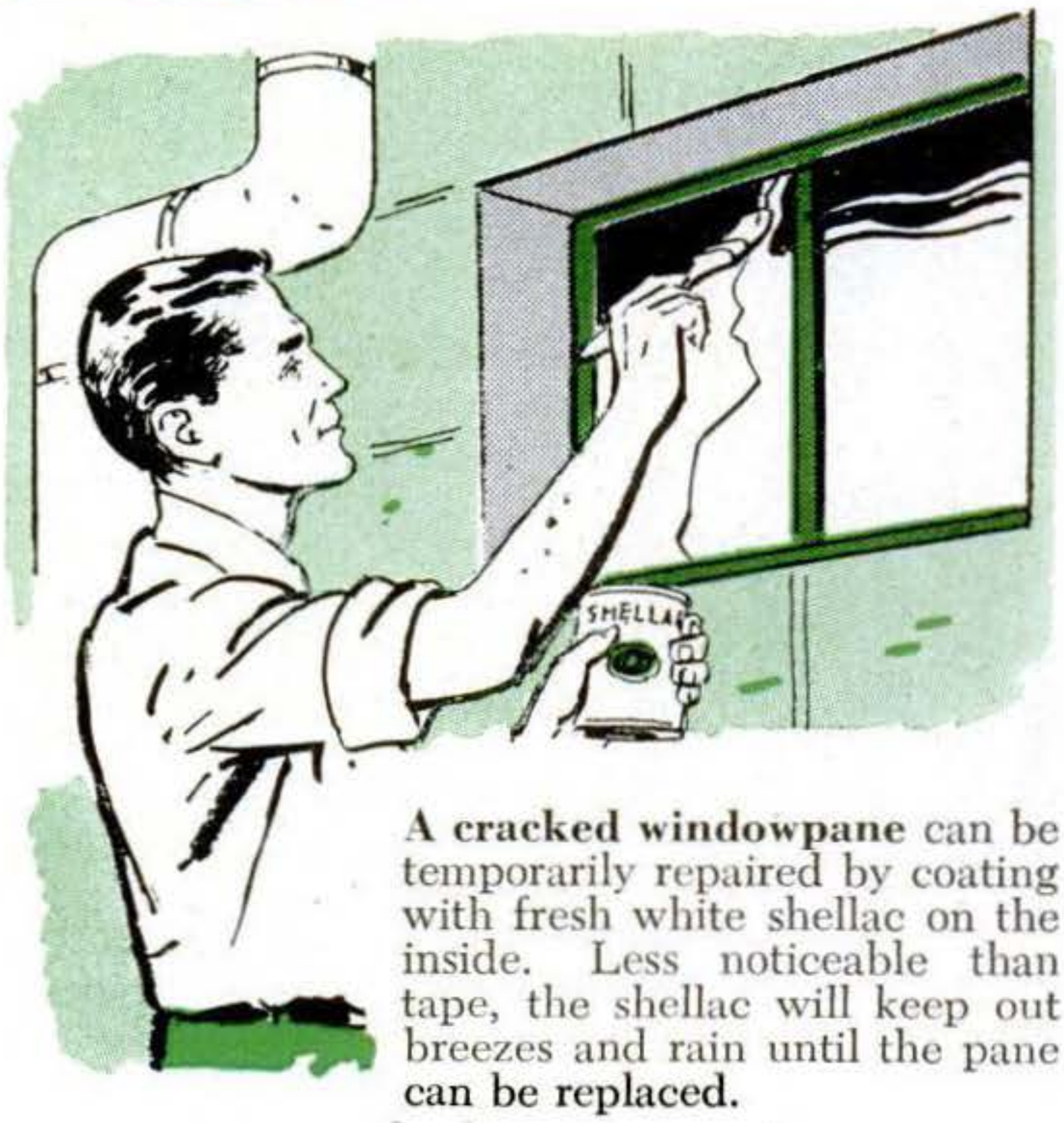
Suspender clips from worn-out braces sewed inside a child's coat sleeves will anchor his mittens and guard them against loss.

Clean clothespins for little laundry jobs between washdays can be kept handy in a fruit jar. Nail lid to clothes pole, then screw jar in place.



For hanging brushes in turpentine, a clip can be bent from a wire coat hanger. Drill a hole in each handle, locating the hole so that the bristles will clear bottom of can.

Rubbers and overshoes find a neat storage place in an old metal breadbox. Fancied up with a coat of flat black paint and a gold initial, it will be handsome enough to be parked conveniently near the front door.

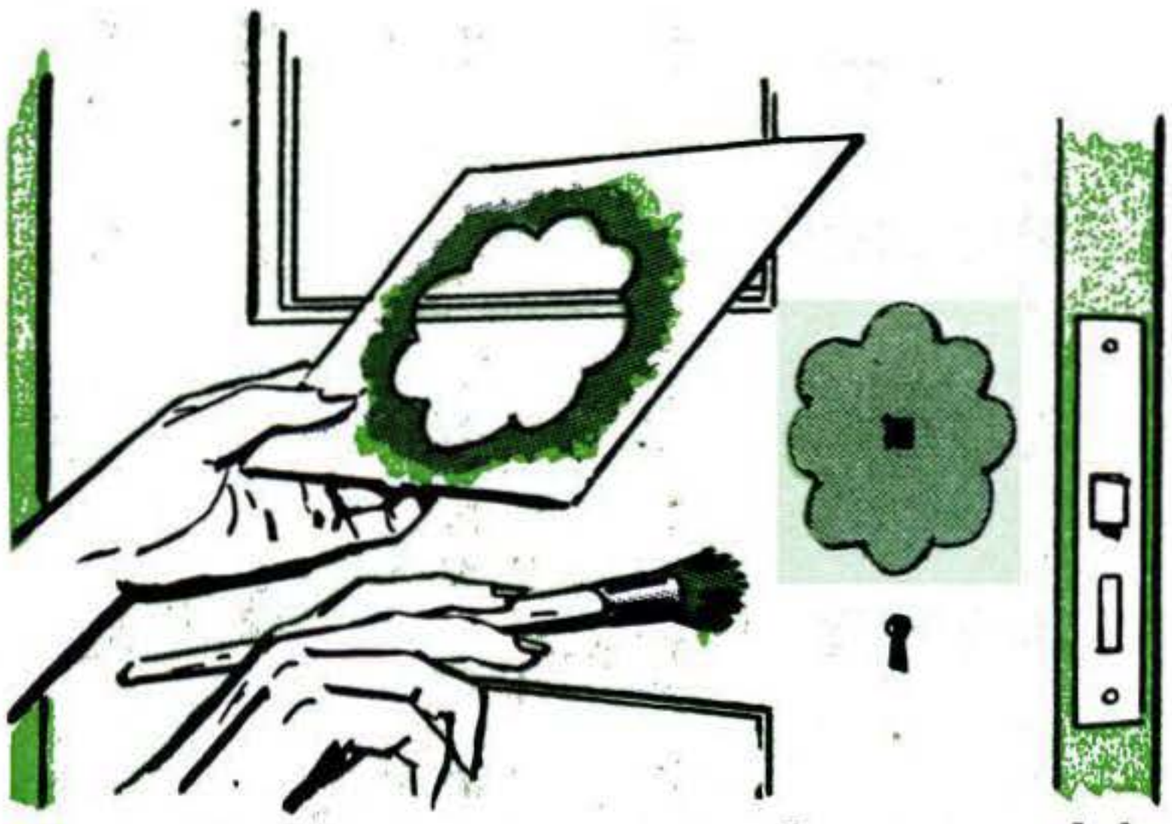


A cracked windowpane can be temporarily repaired by coating with fresh white shellac on the inside. Less noticeable than tape, the shellac will keep out breezes and rain until the pane can be replaced.

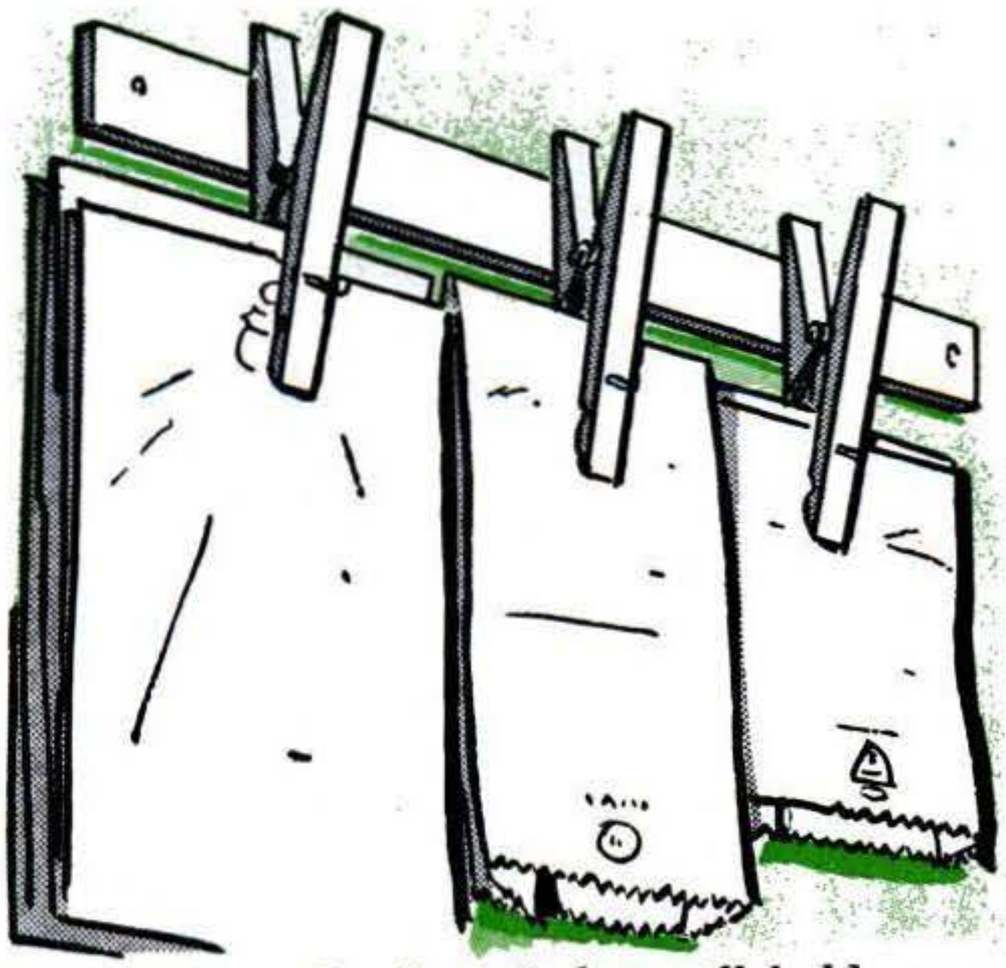
Copyrighted material

Save those little cans that hold concentrated fruit juice. They're just right for freezing icebox-cookie dough. At baking time, the bottom of can is cut out to push dough through for slicing.

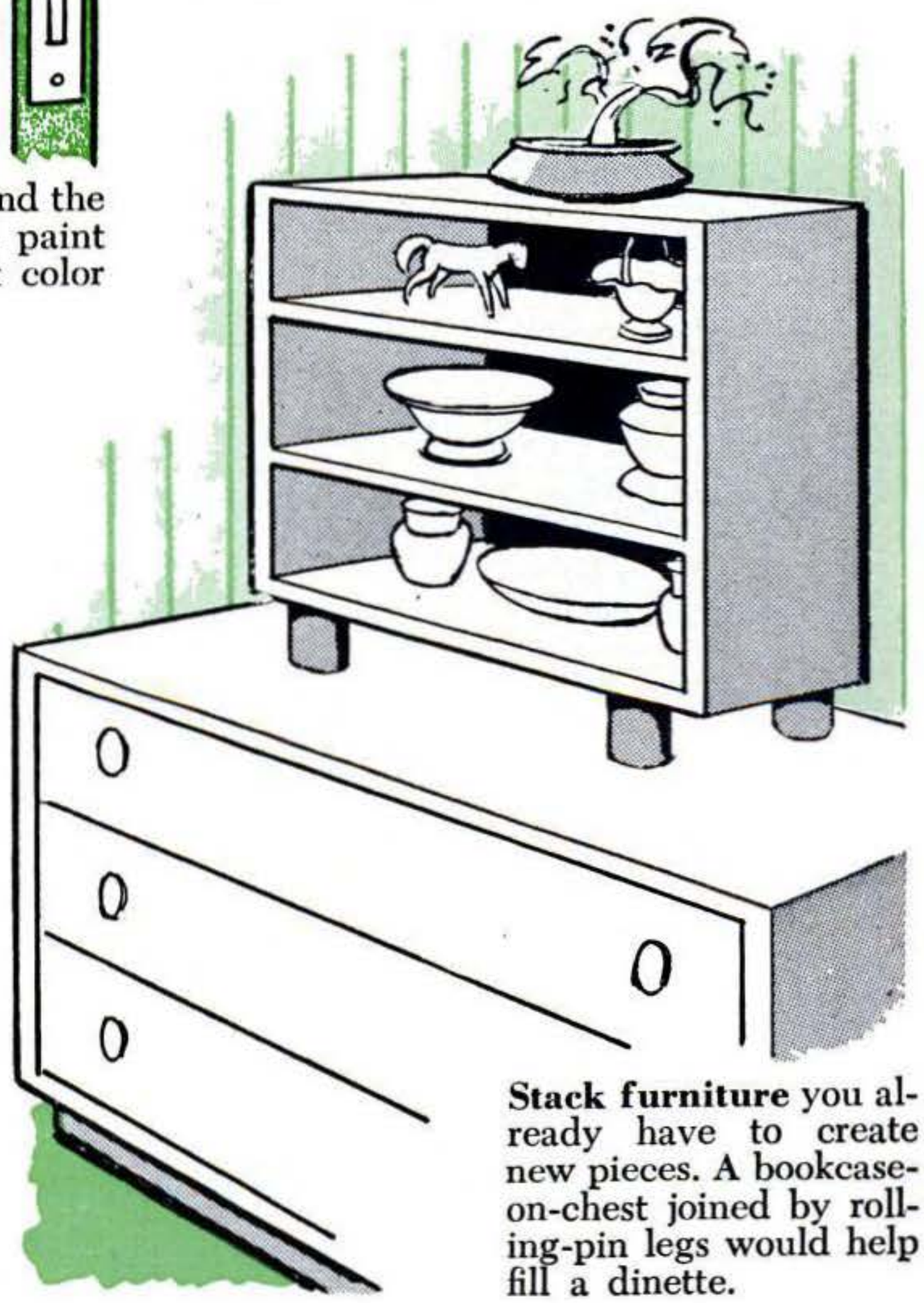
A tool pouch cut from an old hot-water bottle is handy when working around the house or garden. Two slits allow it to be hung from the belt.



To foil fingerprints, try painting flowers around the doorknobs of light-colored doors. Use an oil paint that can be washed easily and choose a dark color that won't show smudges readily.

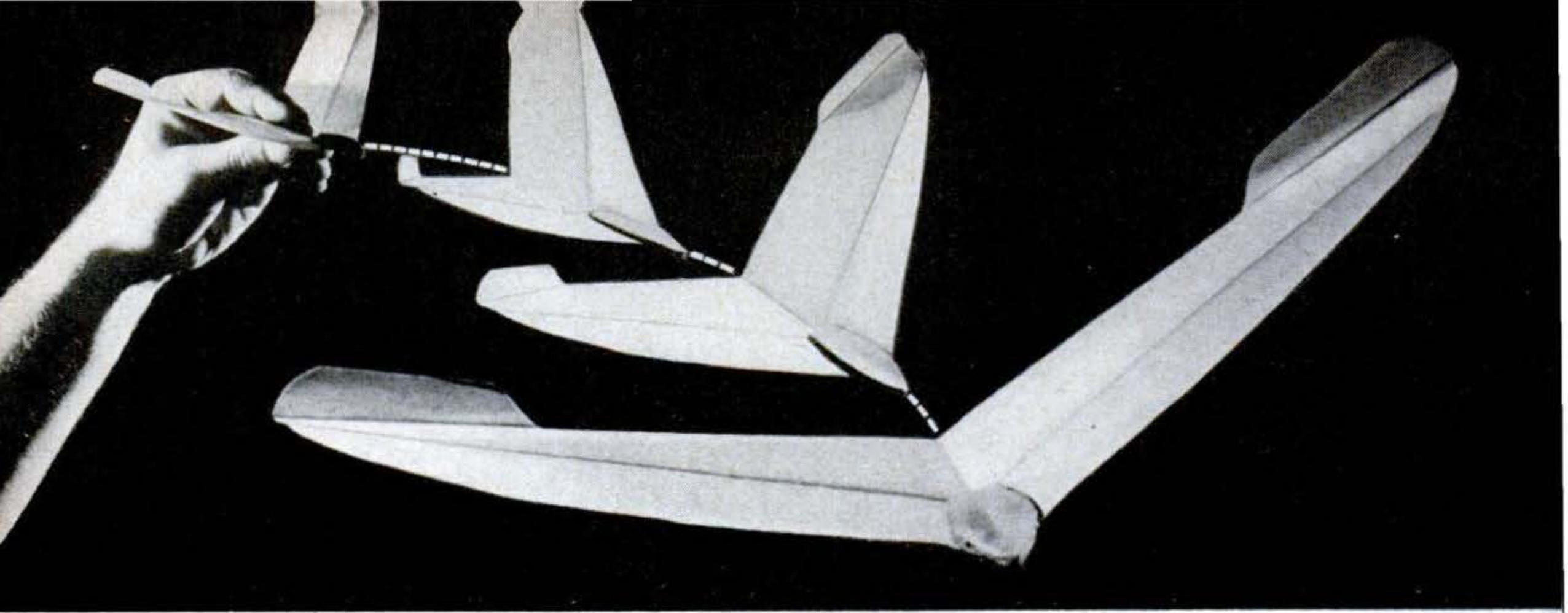


A kitchen clip board that will hold paper bags, bills and household memos is easily made by attaching a few spring-type clothespins to a piece of yardstick.



Stack furniture you already have to create new pieces. A bookcase-on-chest joined by rolling-pin legs would help fill a dinette.

Copyrighted material



Paper Flying Wing Gives Lessons in Flight

Study the slow-motion antics of this paper model that will float around your living room for five seconds or more.

THE easiest way to analyze motion is to study it in action. No strobe lights are needed to study the flight characteristics of this flying wing—its feather-like glide quickly shows the effect of small changes in shape.

The pattern on the opposite page is a basic one for flying-wing gliders, but exact size isn't important. One that I made from tissue paper had a wingspread of 3″ and an average gliding time of 7 seconds—a long flight indoors. To launch, hold high and release gently—don't throw.

There are three points to watch for in making these gliders: (1) Lay out the wing so that the grain of the paper runs across it from tip to tip. Drape the square of paper over a pencil, first one way and then the other. Whichever way it sags least shows the direction of the grain. (2) Cut both wings identically so the glider will balance. (3) Trim the nose weight so that the glider will neither stall nor dive.

At right are more tips on cutting and folding your glider.—*Wallis Rigby, NYC.*

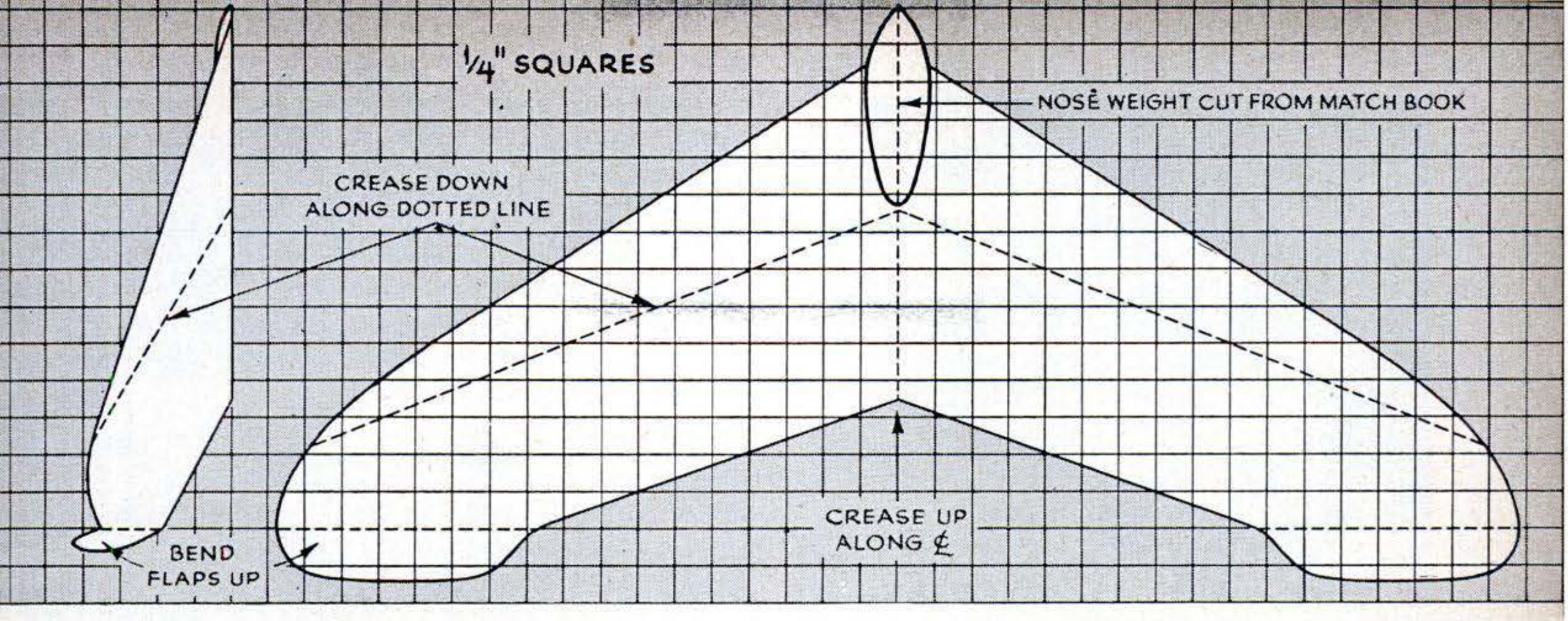
Chemical Treatment Kills Static Charges

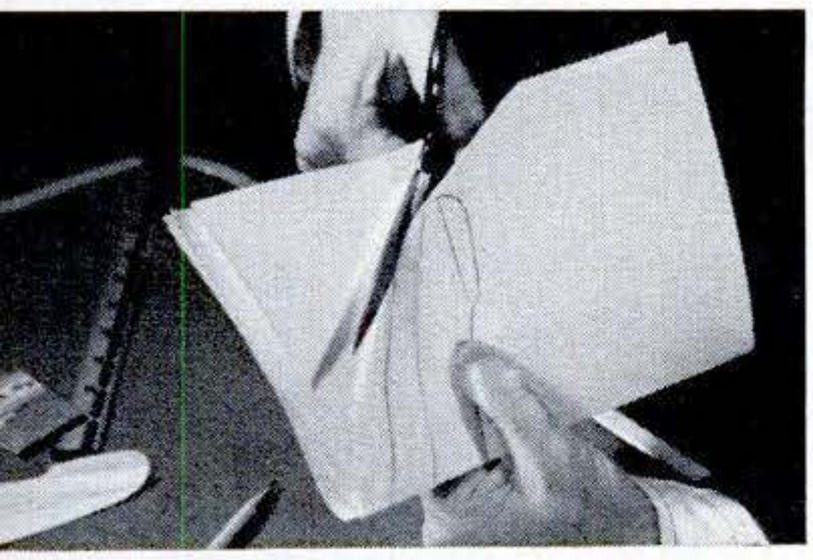
STATIC electricity, an elusive imp that attracts dust and gives finger-tingling shocks, is at its worst these steam-heated months. It can easily be tamed, though, with any of the new static-grounding solutions that bleed off electrical charges before they can build up to a nuisance level.

The chemical solution I've used, which costs about 60 cents for a 4-oz. bottle, may be brushed, sprayed or wiped on, and it dries to an invisible film. Some other uses beside those at right include adding a dilute solution to the rinse water for nylon shirts or slips; spraying on such dust attractors as plastic radios or TV sets; and wiping on auto slip covers and door or window handles.—*Ken Murray, Colon, Mich.*

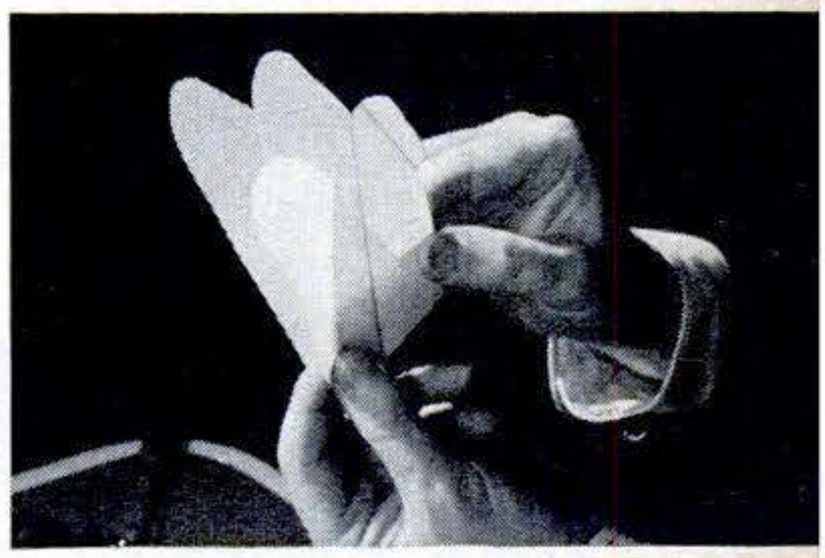
Unpleasant shock, such as that received when walking across a thick rug, is completely eliminated by spraying rug with alcohol-diluted antistatic solution. Floor wax, with three percent antistatic solution added, treats floors at regular waxing periods.

Copyrighted material

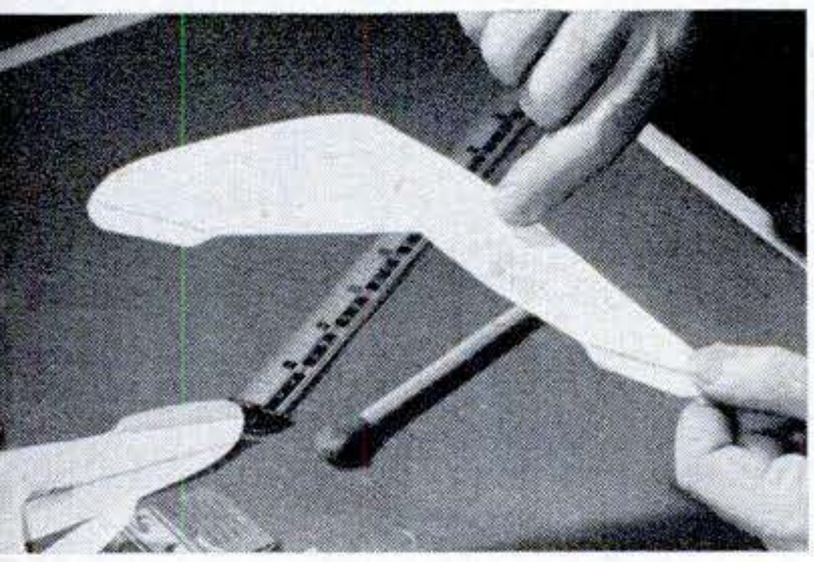




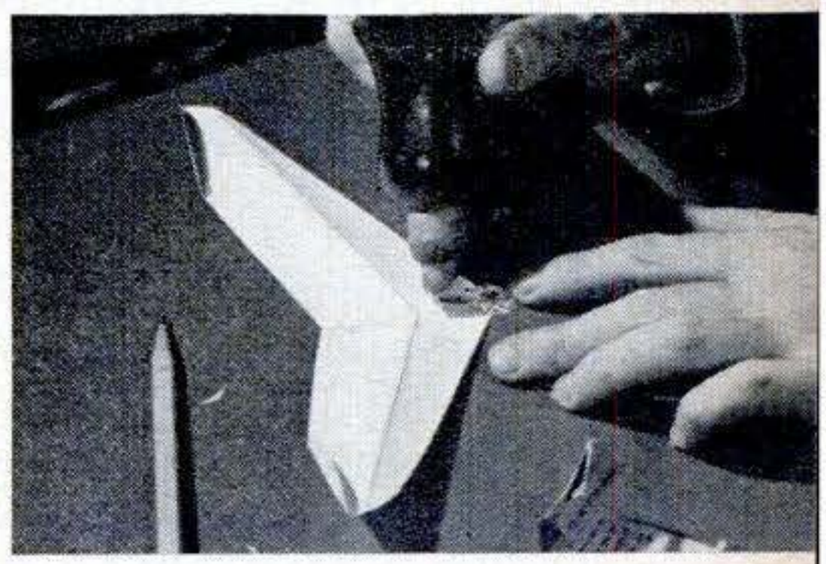
Cutting tissue glider is tricky. For clean cut, tissue should be folded into sheet of typing paper to back it up and to keep it from creeping away from the scissors.



Two gliders at one cutting. Separate tissue cut out from paper. Though both are the same size, tissue glider will float, prolonging its flight, while paper glider will swoop across room.

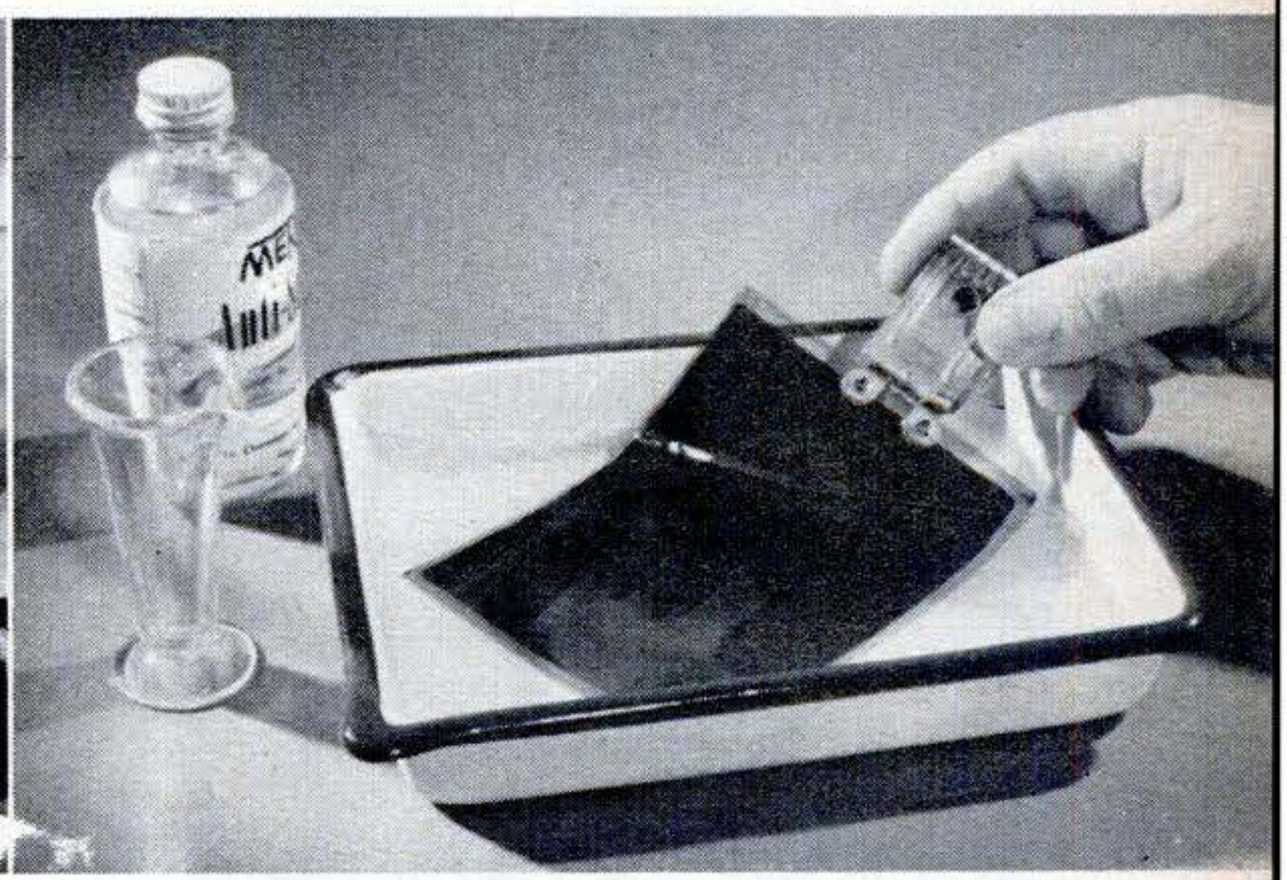


Crease wings to form camber and make them more rigid. Bend flaps up in opposite direction. Fold accurately on guide lines. Careless folding can destroy inherent stability.



Nose weight, cut from match-book cover, is glued in place. If too light, a smaller weight of the same shape can be glued on top of it. Crease weight along its center.

Charged-up records will pull ashes out of tray just as they pull dust out of the air. Treated record at right has lost its attraction for dust, which means that it will last longer and play with less surface noise. All treated objects stay clean longer.



Dustfree negatives are produced by rinsing after processing with antistatic bath mixed as follows: 6 c.c. Kodak Photo-Flo, 10 c.c. antistatic solution, water to make 1 liter (filter before using). The negatives will dry quickly without requiring wiping.

Copyrighted material

Treasure Chest Stores Records

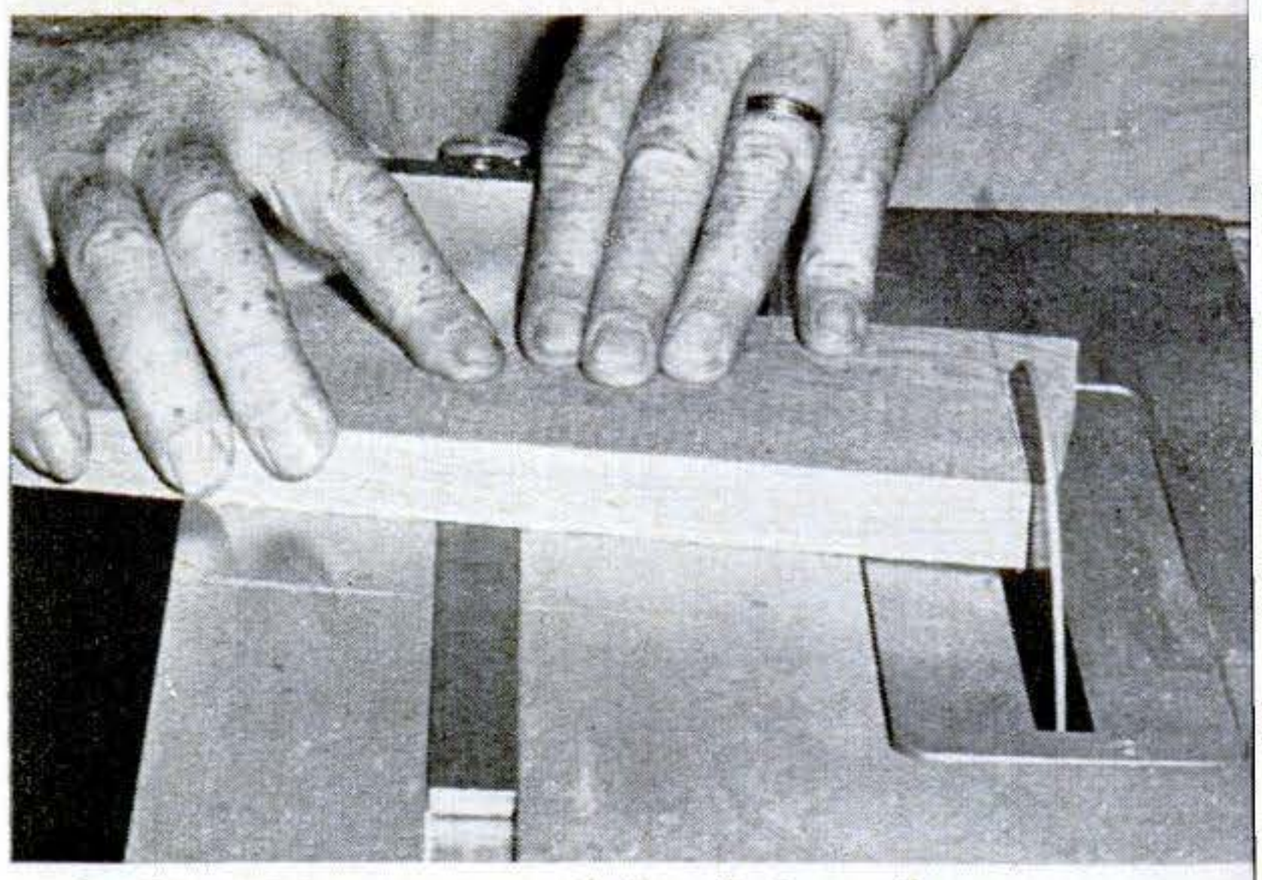
Dark contrasting oak and beaten brass make this authentic-looking pirate chest a real treasure in itself.

By Shep Shepherd

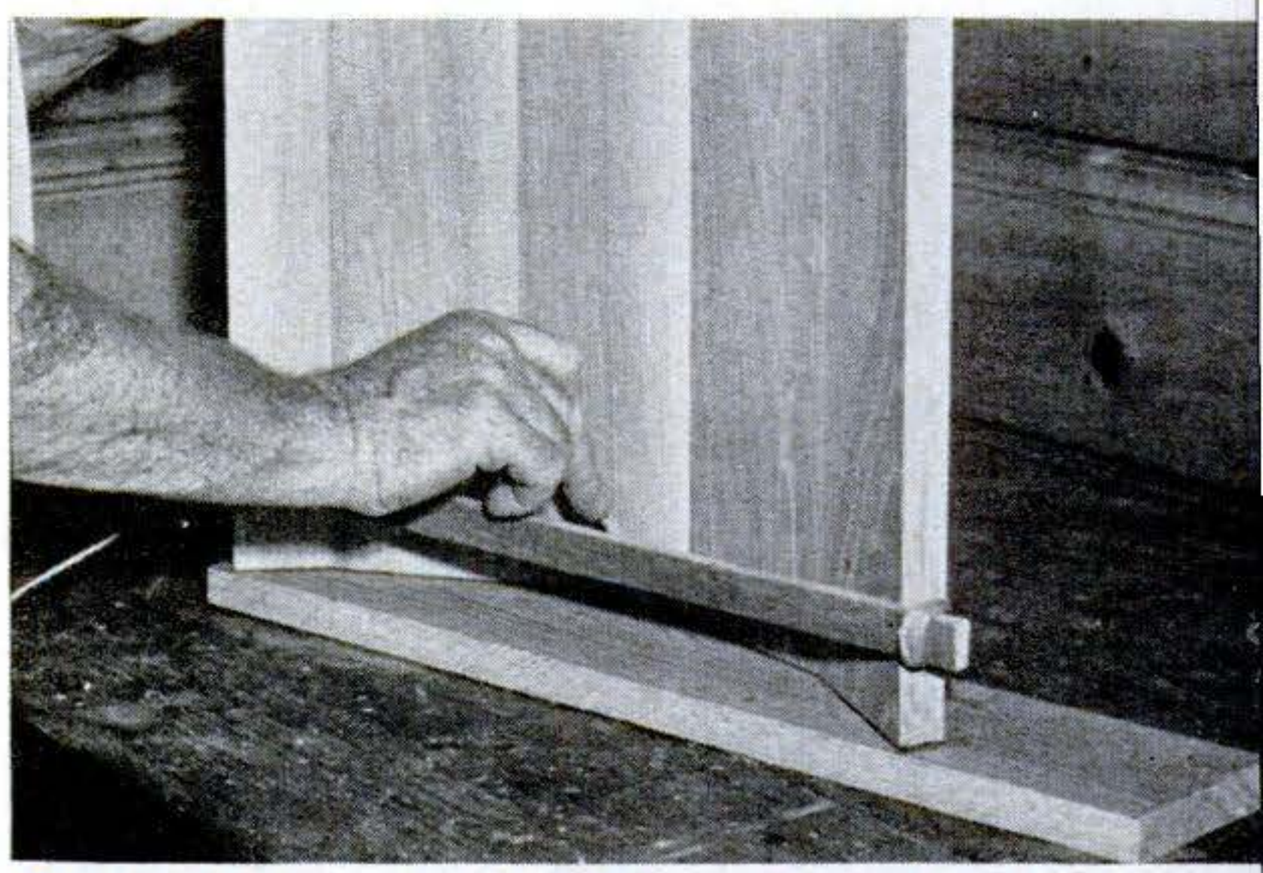
LONG JOHN SILVER would have given his other leg for a chest like this. You can have it the easy way—by making it in your workshop. While it's fine for storing phonograph albums, there are a lot of other uses for it in close-quarters living. Examples: holding the kids' toys, storing liquors, concealing a tank-type vacuum cleaner.

WHAT YOU WILL NEED

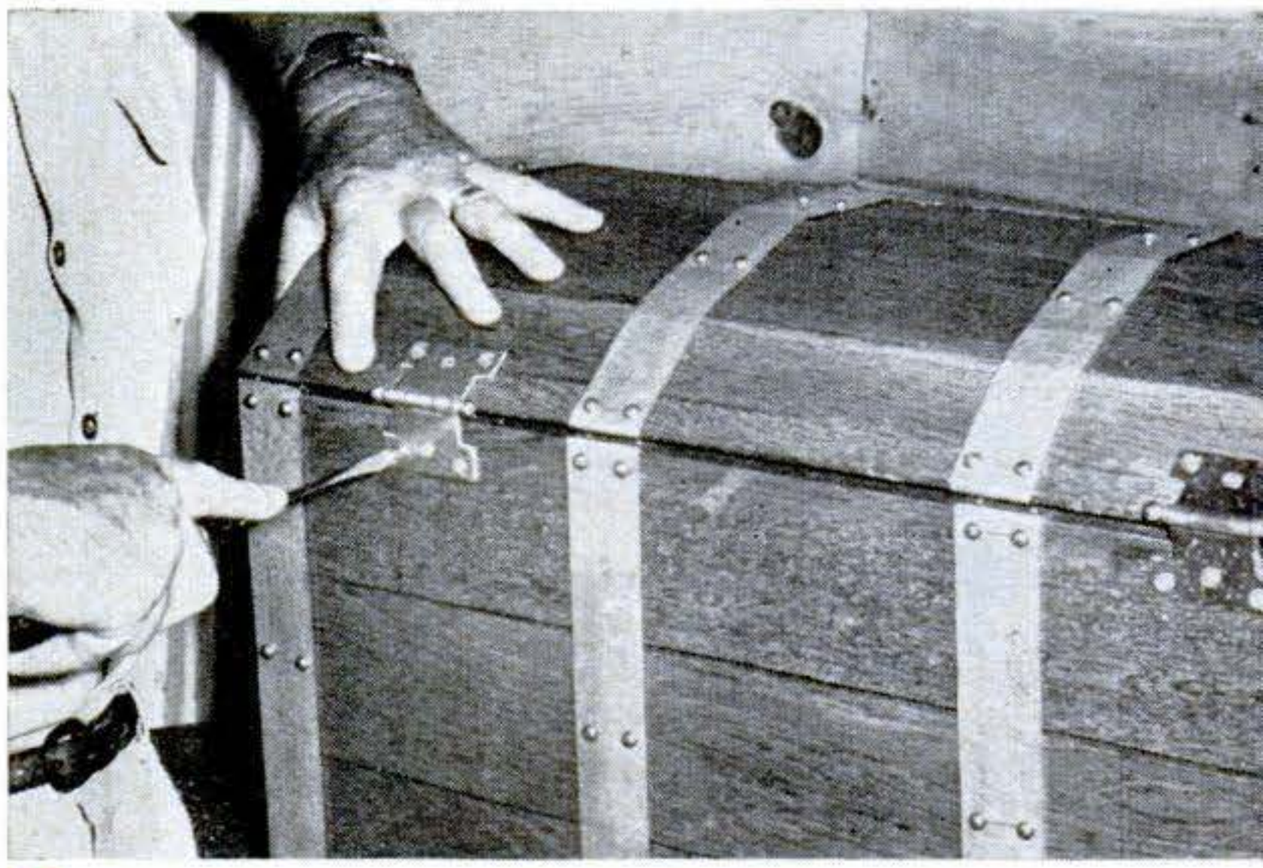
5 pieces 1″ by 4″ oak 25½″ long.
2 pieces 1″ by 2″ oak 25½″ long.
6 pieces 1″ by 4″ oak 24″ long.
8 pieces 1″ by 4″ oak 18″ long.
1 piece ½″ plywood 12″ by 22½″.
18 feet thin brass 1½″ wide.
100 roundhead rivets ¼″ long.
Brass handles, hinges, hasp, chain.



1 CHEST ENDS are cut and fitted first. Lower edge of bottom endpiece is 14″ long; upper edge of top piece is 18″ long. Miter head is set at 10° to trim ends.

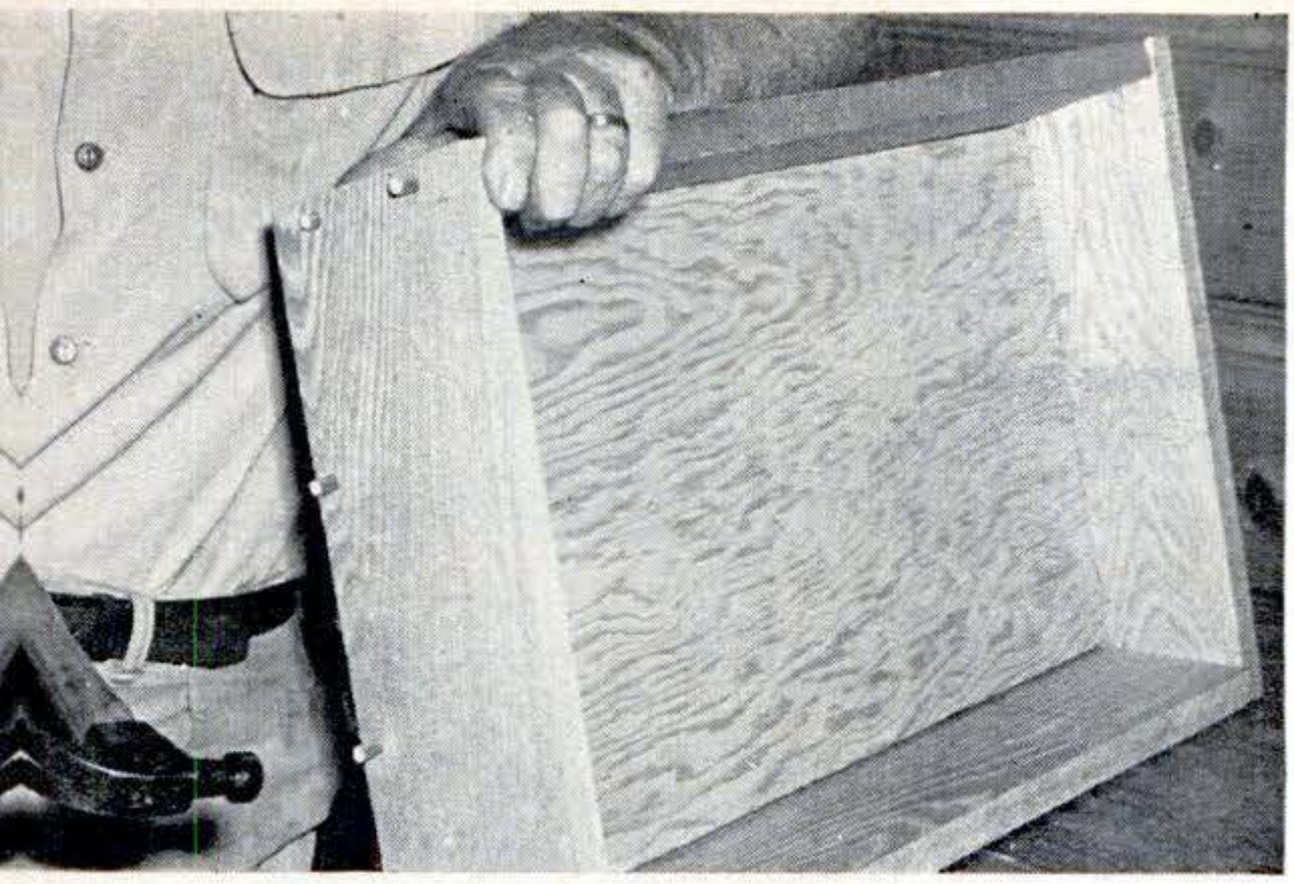


4 LID PIECES are tied together with cord and braces and outline is drawn on lid end boards. After end boards are cut the segments are joined to them with glue and nails.

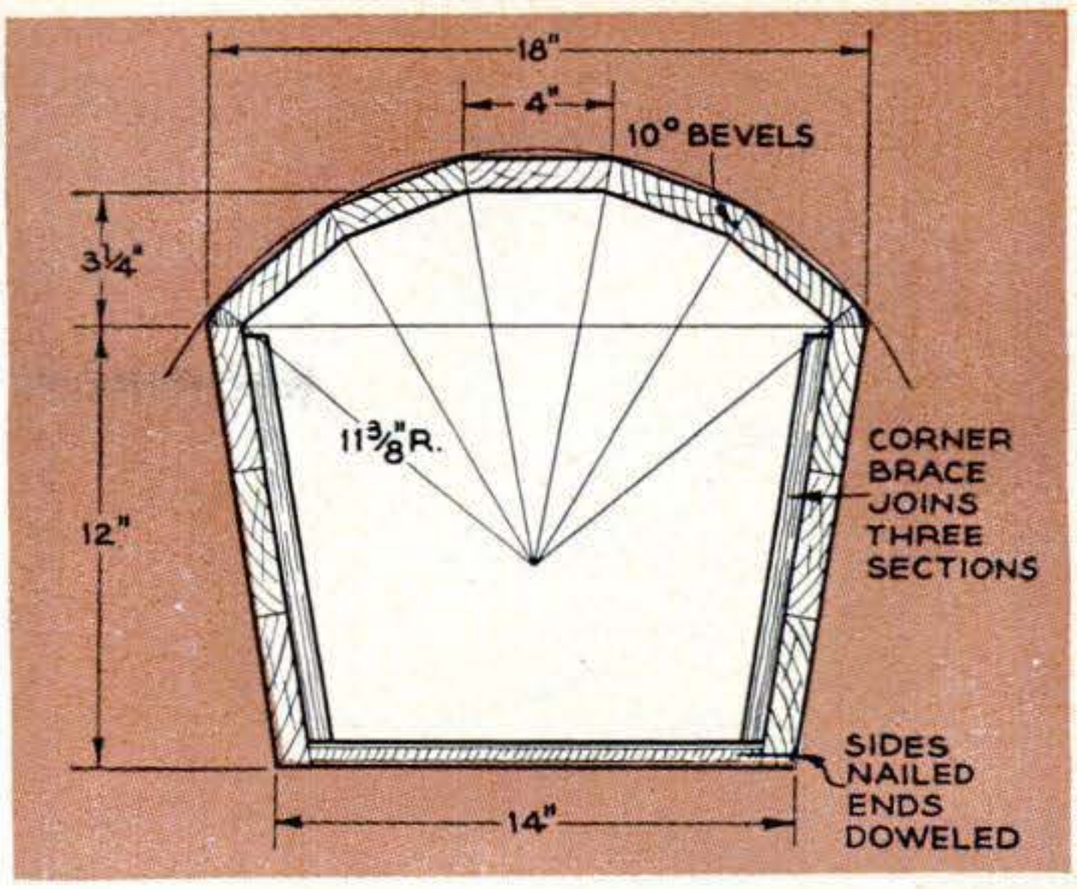


7 HEAVY BRASS HINGES are beaten and fastened to rear of chest. Brass hasp is also beaten and screwed to front of chest. An old padlock on the hasp will add to the effect.

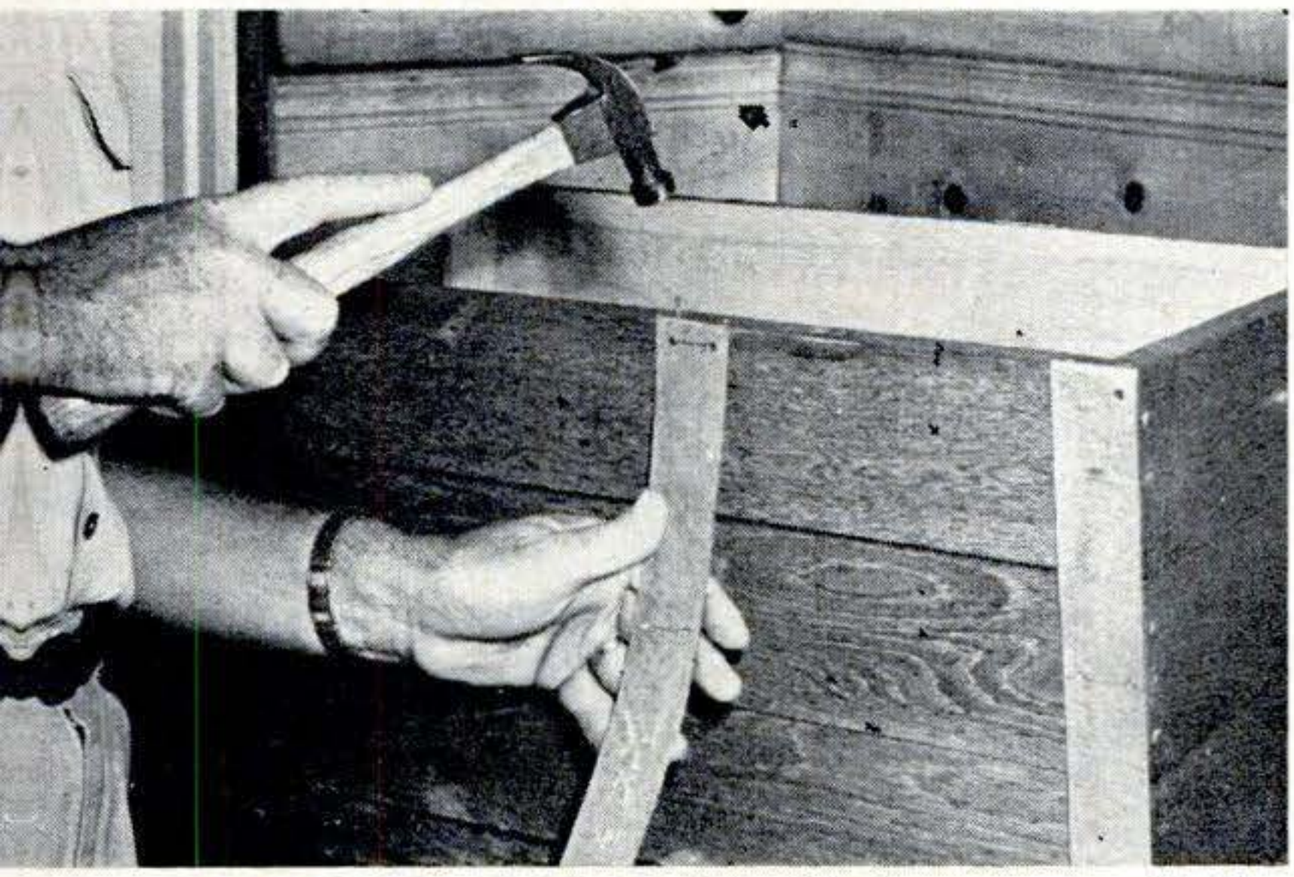
Copyrighted material



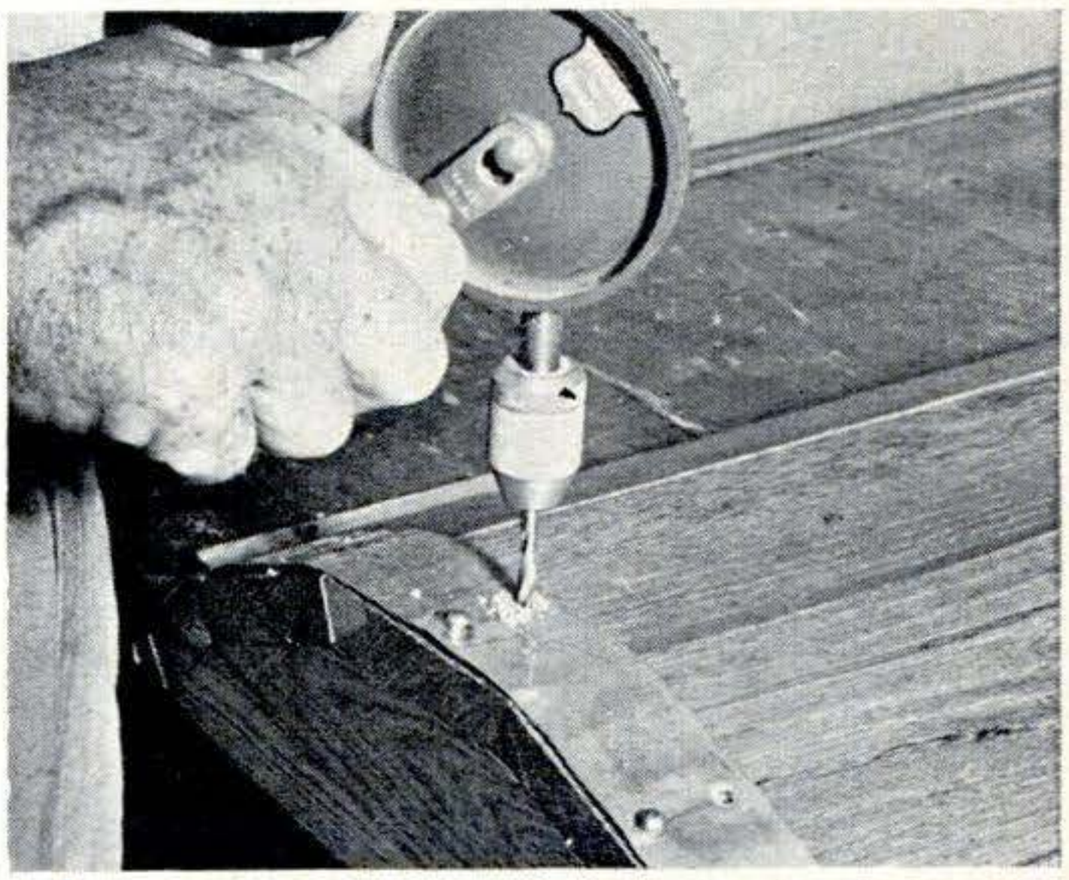
2 BOTTOM SECTION is assembled before other two sections are added. Ends are joined to sides with ¼″ dowels and glue. Bottom is doweled at ends, nailed at sides.



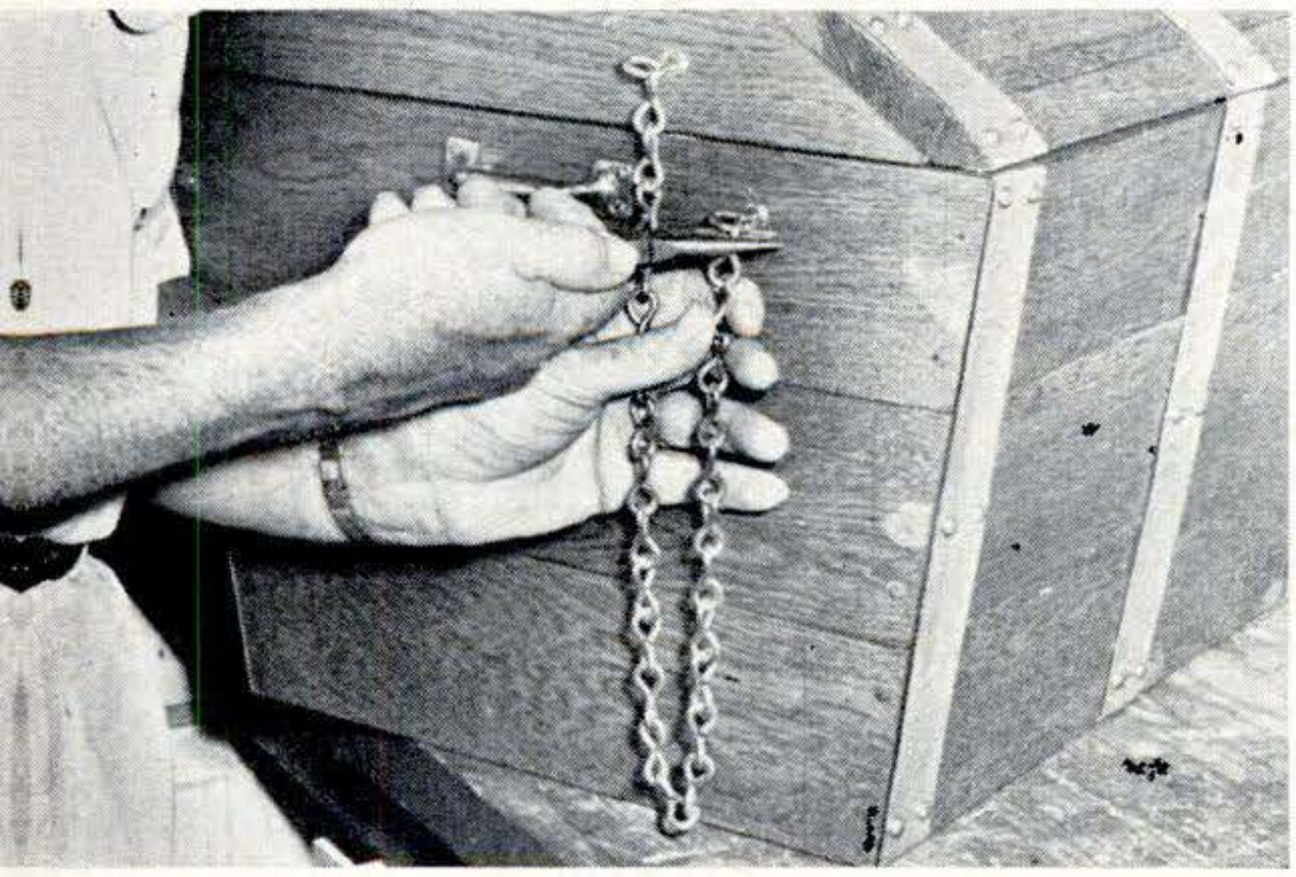
3 CUTAWAY DRAWING above shows construction of chest. Lid is formed by cutting 10° bevels on edges of 4″ boards. Two thin strips at each side of lid bring it to 18″ width.



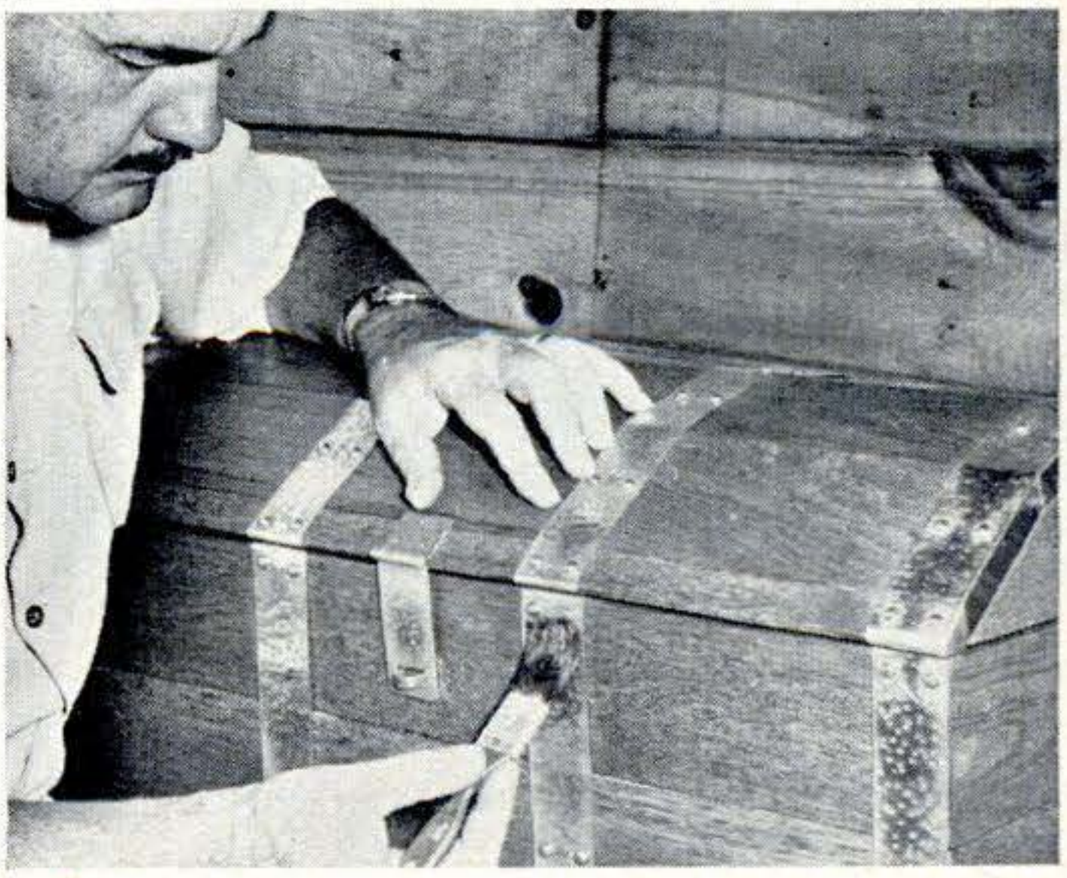
5 CHEST IS BOUND with thin brass strips 1½″ wide. Strips are cut to length, beaten with ball-peen hammer and drilled for ⅛″ rivets. Chest has been given first coat of oak stain.



6 RIVETS ARE DRIVEN into undersize holes after ends of strips have been nailed to edges of lid and chest. A drop of cellulose cement in each hole will help hold rivets in place.



8 BRASS CHAIN attached to each end prevents lid from falling back when chest is open. Adjust length so opened lid lines up with back slope. Heavy brass handles go on ends.



9 APPLY CLEAR LACQUER to brass after bringing up highlights with fine steel wool, and apply several additional coats of oak stain to darken wood and contrast with the brass.

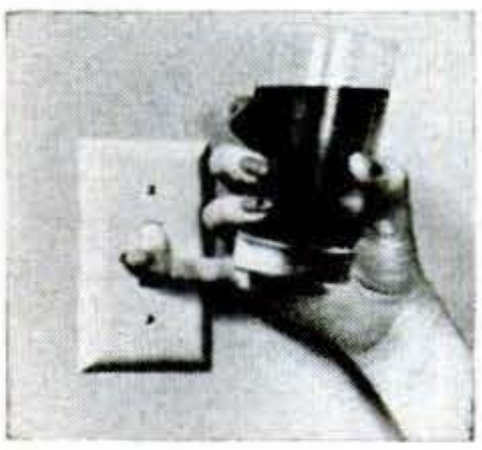
Copyrighted material

New for the Handy Man

1. Plastic Tops You Can Apply. New materials make it easy for the handy man to install tough plastic work surfaces on homemade kitchen counters.

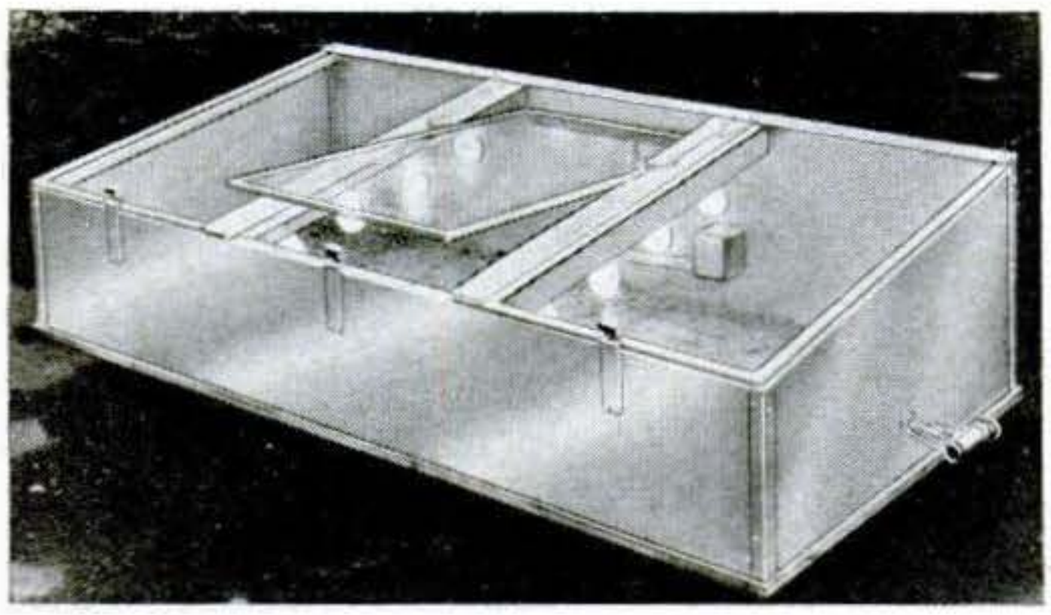
One laminated plastic (left above) needs no adhesive at all—it comes slightly bowed so that it will hug any flat surface when the edges are secured with metal edge molding. For covering walls, the edges are fastened by metal batten strips, which are then concealed by snap-on molding. The 1/10"-thick Panelyte is available in 11 colors.

At right above Formica is shown being applied with no fancier equipment than a rolling pin. A new quick-setting adhesive, which needs no clamping, is applied to both work and back of the 1/16" plastic, and allowed to set a few minutes. The panel is then pressed down with a rolling pin. The adhesive works on raw wood or old paint.



2. Sensitive Switch. This wall switch is so sensitive that it responds to the slightest touch—a big advantage when you have to work it with your hands full. Rated to carry 12 amp. at 115 volts, the switch has sterling silver contacts and is absolutely silent in operation.

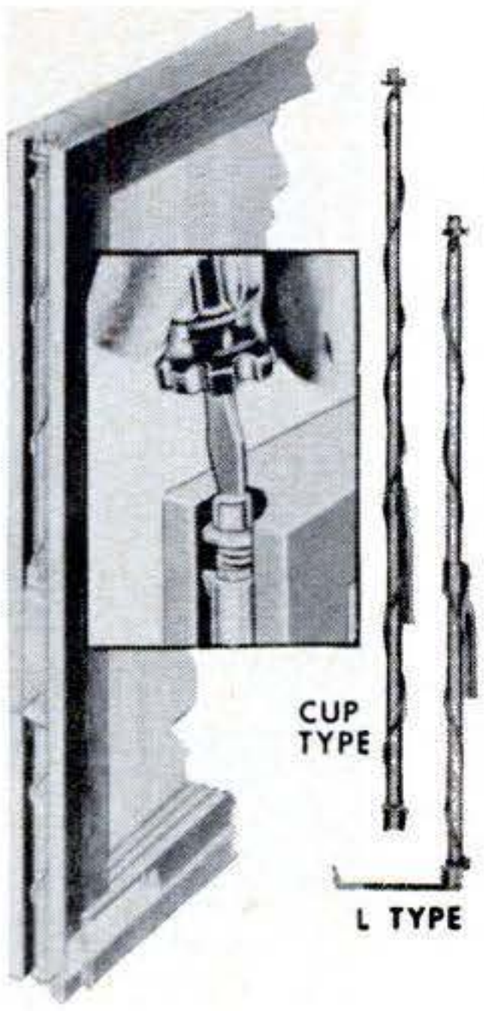
3. Wall Sealer. Scrub this water-mix paint on your basement wall and it stops seepage and dampness, says the maker. Called Silitex SF, the paint contains silicones and metallic compounds that enter the masonry and bind with it. In tests the paint sealed cinder blocks against an 8′ head of water.



4. Automatic Aluminum Hotbed. Eight 25-watt bulbs are controlled by a thermostat to maintain growing temperatures in 3′ by 6′ hotbed above. Another thermostat automatically opens the pivoted center sash for ventilation. Two sprinkler heads inside provide spray irrigation and plant food.

5. Gas-Torch Kit. Using a popular throw-away fuel tank, a new kit provides instant heat for almost every need. Three burners give maximum, medium and pinpoint flames. Included in the kit are a diamond-point soldering tip for fine work, a chisel-edge tip for heavy soldering, and a paint-remover tip. The entire assortment is packed in a metal carrying case, which has an extra compartment for spare fuel.

Copyrighted material



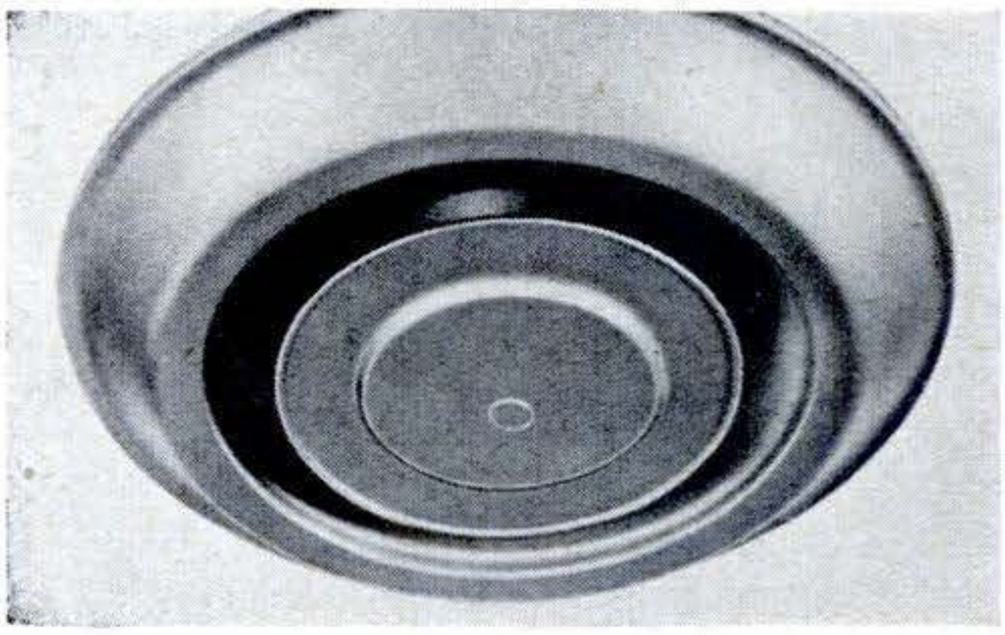
6. Adjustable Sash Balance. The tension of these concealed sash balances can be adjusted at the time of installation or afterwards without removing them from the sash. Tension can be applied to the L-type balance when it is being installed by turning the arm at the bottom. The other type is adjusted with a screwdriver. Both are made for a wide variety of sash sizes.

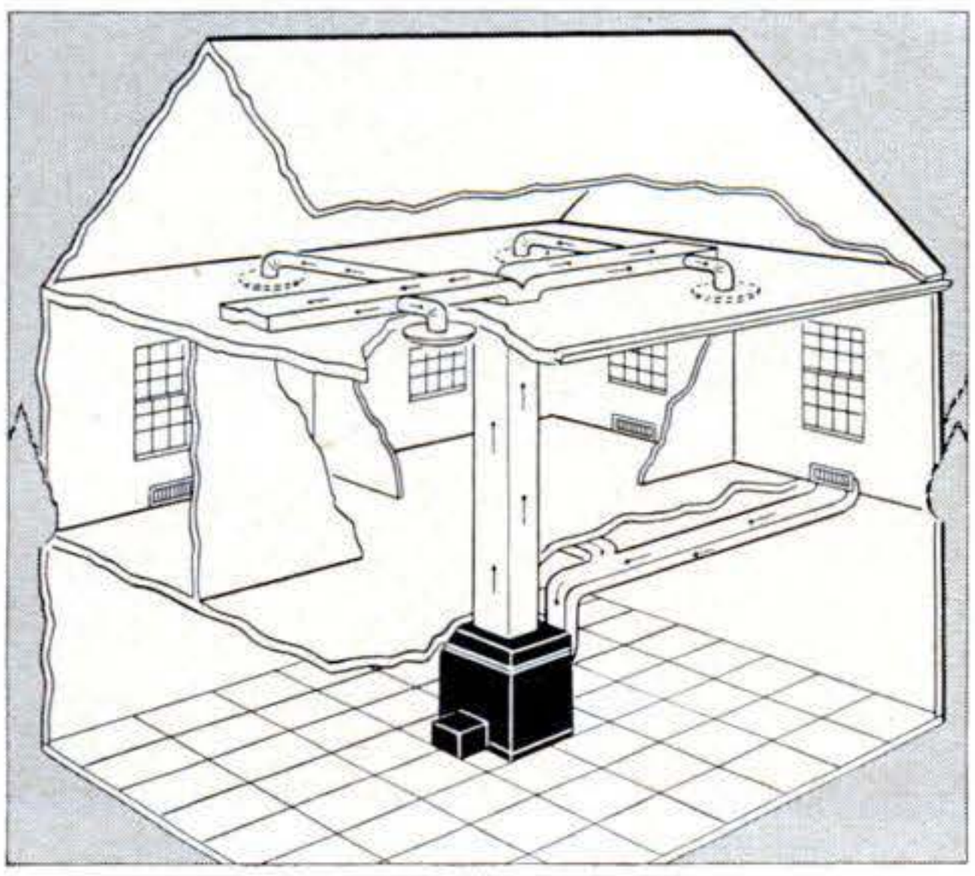
7. Paint Colors Masonry. All masonry surfaces – including stucco, cement, asbestos-cement shingles and brick—now can be coated in decorator-style colors. The coating, a rubber-base paint, is said to keep masonry surfaces free of stains, streaks or mildew and also to prolong the life of masonry by sealing it against moisture. It can be brushed, rolled or sprayed on.

Further information on these products can be obtained from: 1. St. Regis Paper Co. (Panelyte), 230 Park Ave., NYC 17; Formica Co. (adhesive), 4615 Spring Grove Ave., Cincinnati; 2. H. J. Theiler Corp., Whitinsville, Mass.; 3. Prima Products, Inc., 10 East 40th St., NYC 16; 4. Old Copper Mine Farms, Inc., RD 2, Box 198, Plainfield, N.J.; 5. Prepo Corp., Skokie, Ill.; 6. The Turner & Seymour Mfg. Co., Torrington, Conn.; 7. Sapolin Paints, Inc., 229 East 42nd St., NYC.

Ceiling Units Diffuse Hot Air and Blend It With Room Air

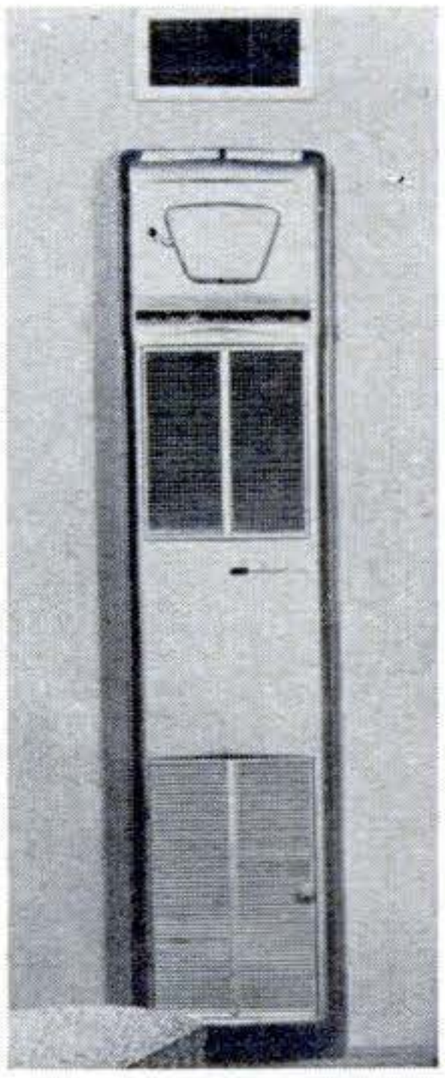
AN IMPROVED hot-air heating system shown below has a central duct from which others branch out to circular ceiling diffusers. The diffusers (right) intermingle heated air with circulating room air. Grilles below the windows return cold air from floor level to the furnace. The system was developed by the W. B. Connor Engineering Corp., Danbury, Conn. Fuel economy is claimed because all heat is distributed. It is said that the desired room temperature is maintained even within a few inches of the diffuser units, which blend 4½ parts of room air to one of hot air.





Gas Heater Fits Between Studs

GAS-FIRED heaters tailored to fit between wall studs need extend only 4″ into the room. They are available as single units, facing one room, or as dual units, facing rooms on each side of a partition wall. A fan mixes and circulates the air. The maker, Coleman Co. of Wichita, Kan., says the casing never is too hot to touch.



Copyrighted material

Why Your Senses May Tell You Fibs

Maybe George Washington never told a lie, but your own senses don't always stick to the truth. Your eyes, ears, nose, tongue and skin can fool you—as these stunts show.

By Kenneth M. Swezey
Author of Science Magic

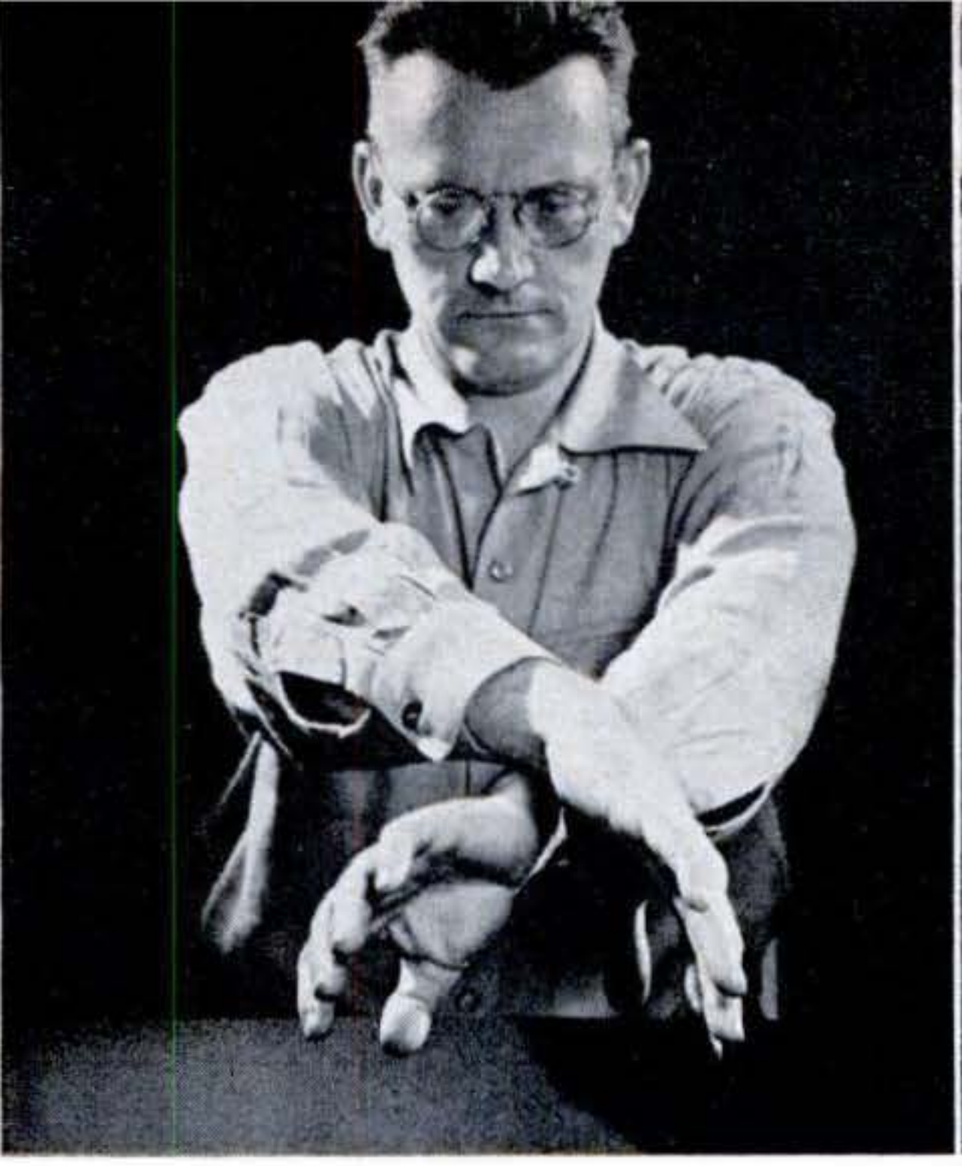
Holding hands with your best girl can be instructive as well as fun. Sitting as above, cross your right wrist over her left. Now both of you turn your hands inward until the palms face and the thumbs are downward. Interlock your fingers with hers and ask her to join you in twisting the clasped hands downward and then up between your respective arms. You now are ready for the real trick. (If this hand-wringing technique confuses you, try the bachelor version at the top of the facing page for practice.)

After achieving the contortions shown above, touch one of your girl's fingers with the index finger of your left hand and stroke it a bit in the interests of science.

Whose finger are you stroking? Your own? It does seem like it—as if it had gone to sleep. You have to look again to see whose it is.

Scientists explain it this way: Apparently the touch sensation, the motion of stroking, and the stroked finger being in a position ordinarily occupied by your own combine to create this strange illusion. But that's only one way your senses can fool you.

Copyrighted material



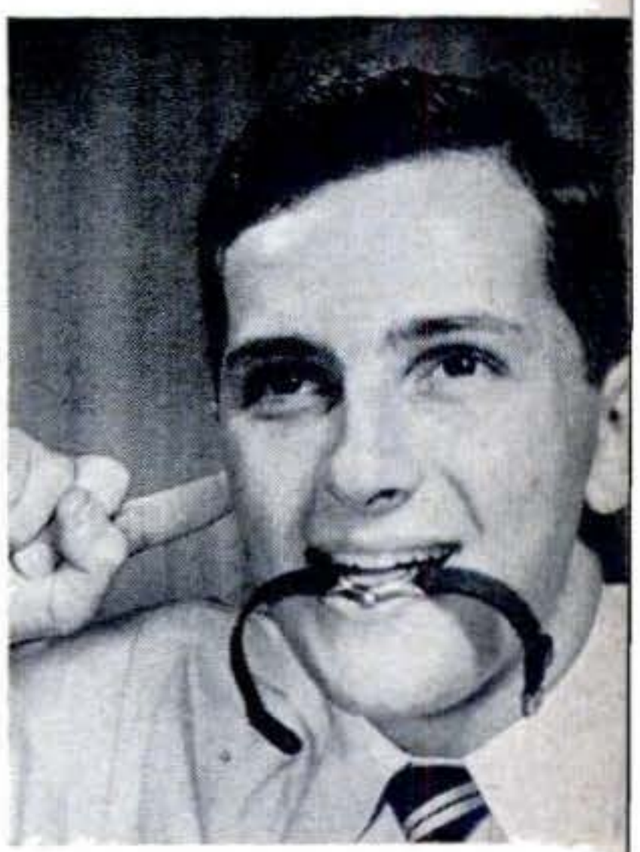
Which finger will move? Usually it is easy to move any finger a friend points to. But it becomes surprisingly hard in this illusion, an old favorite of psychologists. Using your own hands, you go through the same contortions described in the stunt at left—cross your wrists, put your palms face to face, interlock your fingers and then twist your hands under and up as shown by the arrow.

With your fingers thus entwined, have someone indicate (without touching) a finger for you to move. If you act quickly, the odds are that you'll move the wrong finger. Instead, you probably will move the corresponding finger on the other hand.

Why? Because your mind cannot determine which finger is which when your hands are in this unfamiliar position. Until a finger moves or you trace the source of each finger, your body-movement sense is completely baffled.

Two balls from one. If you trust your sense of touch, here's a stunt, handed down from Aristotle, that may change your mind. Without looking, roll a small ball back and forth between the tips of the crossed first and second fingers of one hand. You think you're touching two balls. That's because the touch sensations come from sides of your fingertips that, in their ordinary position, would signal two objects.

Plugging an ear aids your hearing in this case. Grip the watch firmly between your teeth and its ticking will seem loudest in the ear you have plugged. This shows that you can hear sounds by direct conduction through the bones of your head. The ticking seems loudest in the plugged ear because most of the external sounds are barred from the receptors in your inner ear and they don't drown out the ticking.

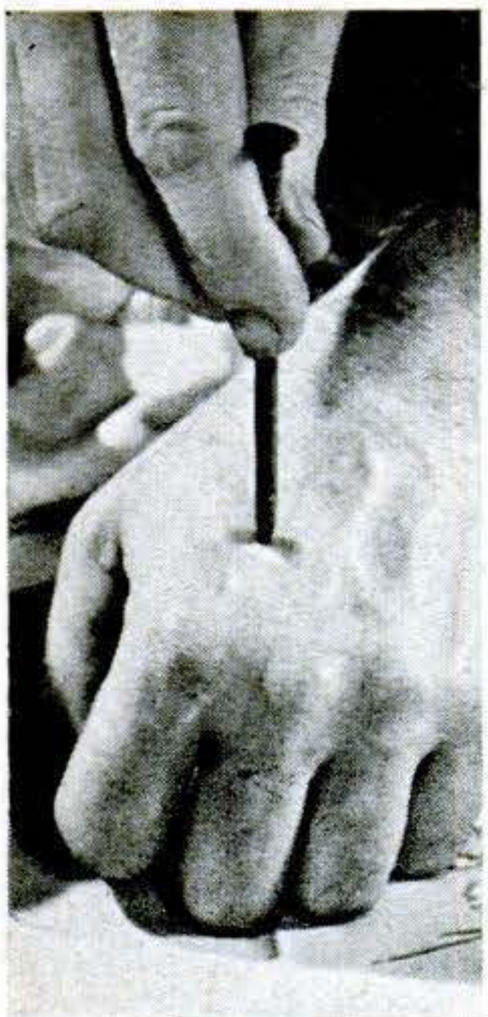


Don't trust your tongue, either. Food may taste bitter, sweet, salty, sour or have no taste at all depending upon where it touches your tongue. A cautious lick, therefore, may give you a wrong taste clue. On the tip, edges and back part of a tongue are taste buds that respond to all taste stimuli. An area about an inch behind the tip has no taste buds at all. Directly behind that area is another that recognizes no taste but sour.

Test this by applying a salt-sour solution (salt and lemon juice in water) to the tip of the tongue. There, it will taste both salty and sour. Apply it several inches back and it will taste merely sour.

See other stunts on the following page.

Copyrighted material

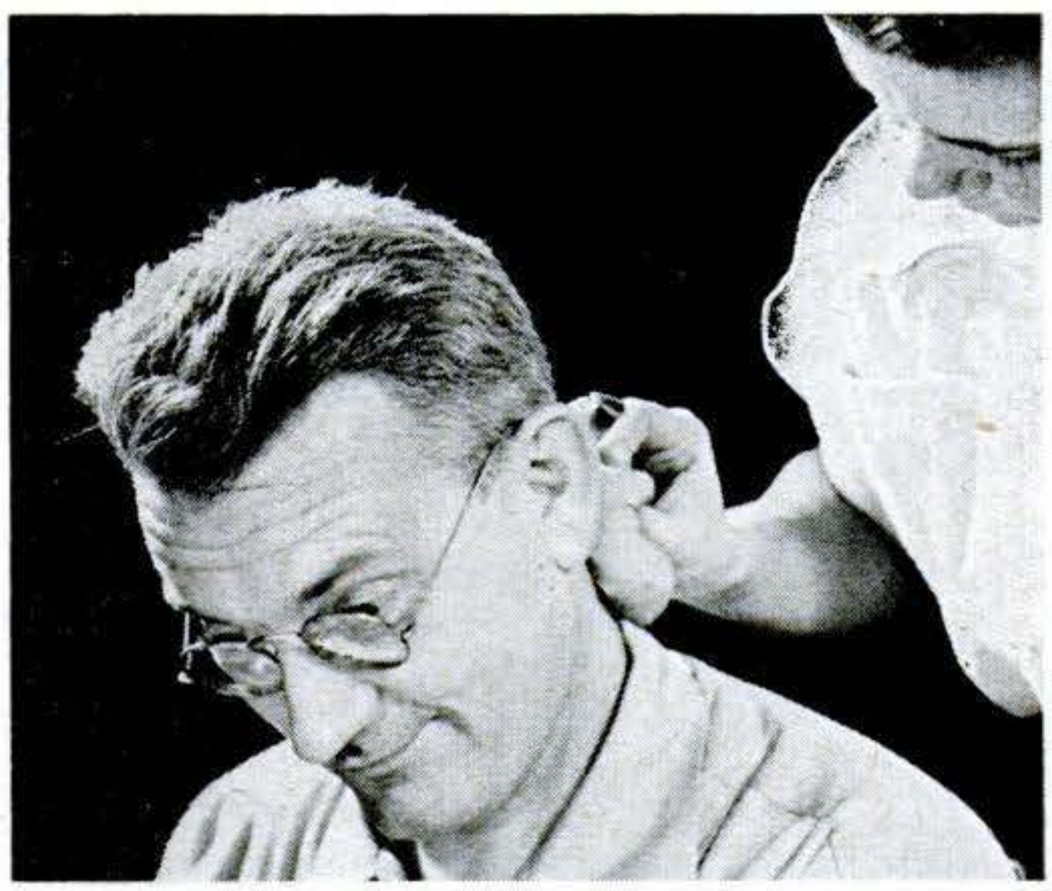


When hot seems cold. Heat a large nail by dunking in water at about 115°, dry it and then touch the point lightly to different spots on the back of your hand. On some spots the warm point will feel cool. This paradox occurs because sensations of heat and cold apparently are sent to your brain from different sets of receptors in your skin. Mild warmth sometimes stimulates the cold receptors. Because there usually are more cold receptors than warm ones, you get an illusion of cold.

How warm is warm? The rapidity with which your skin gains or loses heat also has a lot to do with what you feel. The hotter your skin, the faster it loses heat and feels cold; the colder it is, the faster it gains heat and feels warm. To see this, arrange three bowls as above. Fill one with hot water, the second with lukewarm water, the third with cold. Stick one finger in the hot water, another in the cold. Then put both in the warm water. The hot finger will feel cold, the cold one warm.

How to flavor your potatoes. Your tongue alone can identify salt, sugar, lemons and quinine, but your sense of smell horns in, too, to give you the flavor of such foods as fruit, strong vegetables, coffee and butter.

Blindfold a friend and ask him or her to bite a thin slice of potato while you wave an onion back and forth near the nose. The potato will taste like an onion.

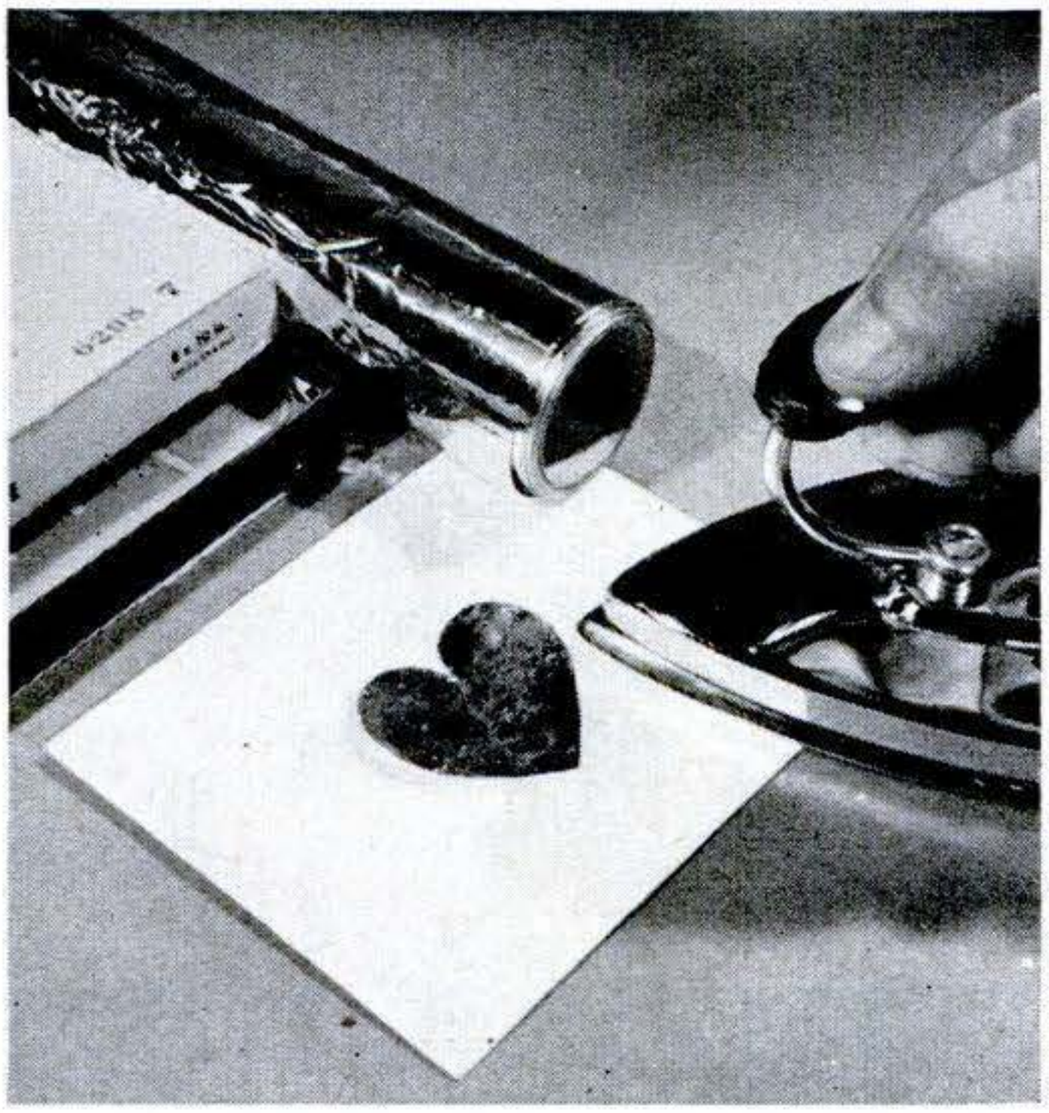


Hey, it's wet! Or is it? You can trick someone into a feeling of wetness by holding a thin *dry* rubber balloon, filled loosely with cracked ice and water, against the back of his neck. Most physiologists agree that there are only four basic skin sensations: pressure, pain, warm and cold. Wetness, dryness, softness, roughness and tickle sensations are all synthesized from those basic four.

How many points? The acuteness of the sense of touch varies widely on different parts of the body. Tape two toothpicks to a stick and touch both points simultaneously to a blindfolded person's arm. On the back of the arm the points will feel like one, even though they are as much as 1½" apart. On the broad of the back or upper arm, you won't know there are two until they are at least 2" apart. But on the fingertips, two can be distinguished when less than 1/12" apart; on the tongue, two points less than 1/25" apart can be recognized as two.

Copyrighted material

Photo Tissue Mounts Foil



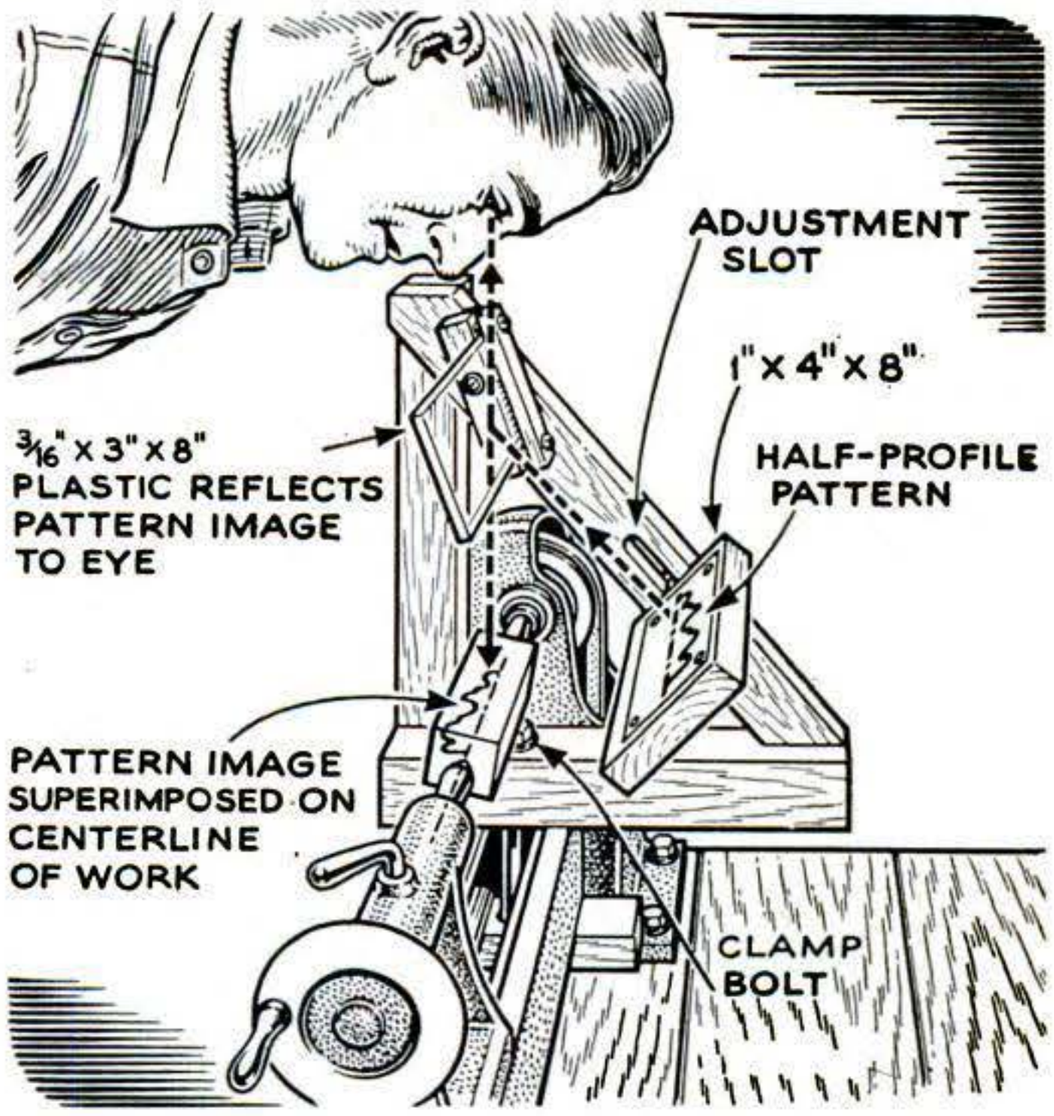
VALENTINE cards, gift packages and letters can be ornamented with brilliant heart-shaped cut outs of household aluminum foil. The foil is cut, laid over a piece of photo-mounting tissue and pressed with a medium-hot iron. It will be burnished brightly and will adhere to almost any surface.—*Ken Murray, Colon, Mich.*

What Would You Do?

I'm fussier about eggs than a hen. I like them cooked just three minutes, but I don't have a kitchen timer. I get along fine without one by keeping a pretimed record on my phonograph. As soon as I pop the eggs into boiling water, I start the music. When it stops I know my eggs are done.—*Robert Marie, Ft. Wayne, Ind.*

Have you pulled off a smart one lately? PSM will pay for acceptable contributions showing ingenious solutions of problems in the home, shop, garage or camp. It doesn't matter if it's wacky—if it works. Use government postcards only. Contributions cannot be acknowledged or returned.

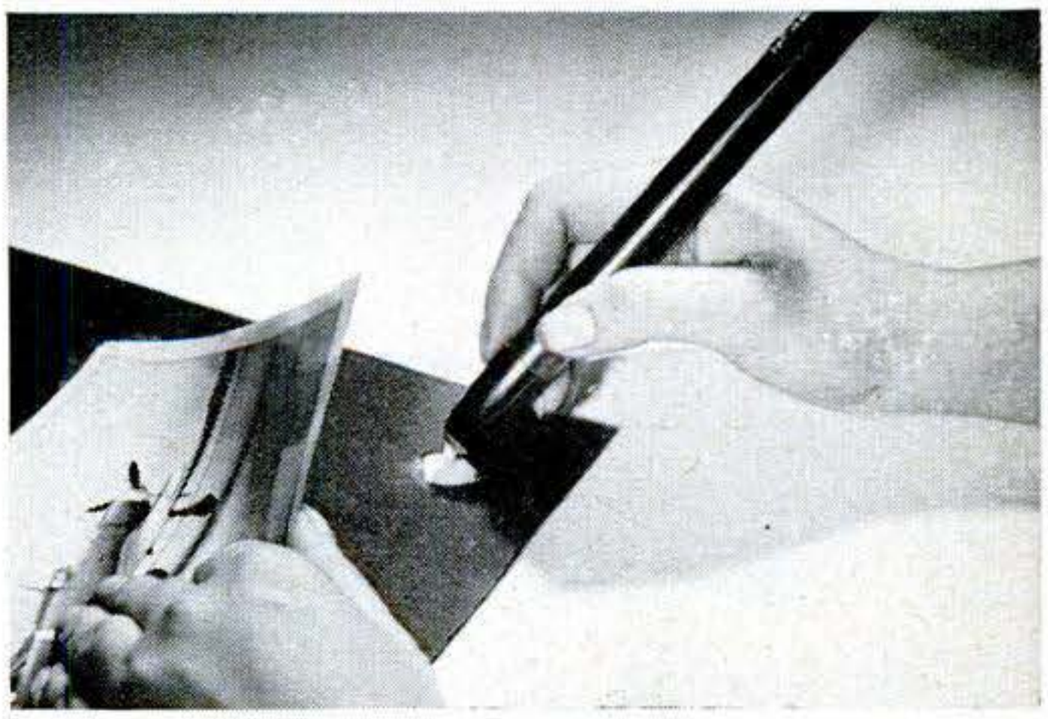
Turning Profile Seen on Work



THE reflected image of a pattern drawn on paper can save you the trouble of cutting out templates when turning duplicate pieces, such as chessmen. With the pattern in place, and the pattern board and plastic sheet set at the correct angles, the operator, looking down at the work through the plastic, sees the outline of the pattern superimposed on the work. It is then a simple matter to make a series of identical wood turnings by following the contours of this reflected image.

Parts turned in this manner will not pass a micrometer inspection, but they will look identical to the eye.—*James R. Gros, Dahlgren, Va.*

Pen Dispenses Drops of Glue



TOUCH the point of this pen to a surface and it leaves a small spot of adhesive for mounting photos or sticking together papers and gift wrapping. A spring-closing point prevents leakage. Refills can be had. *Glu-Pen Corp., 11 W. 42 St., NYC 36.*

Copyrighted material

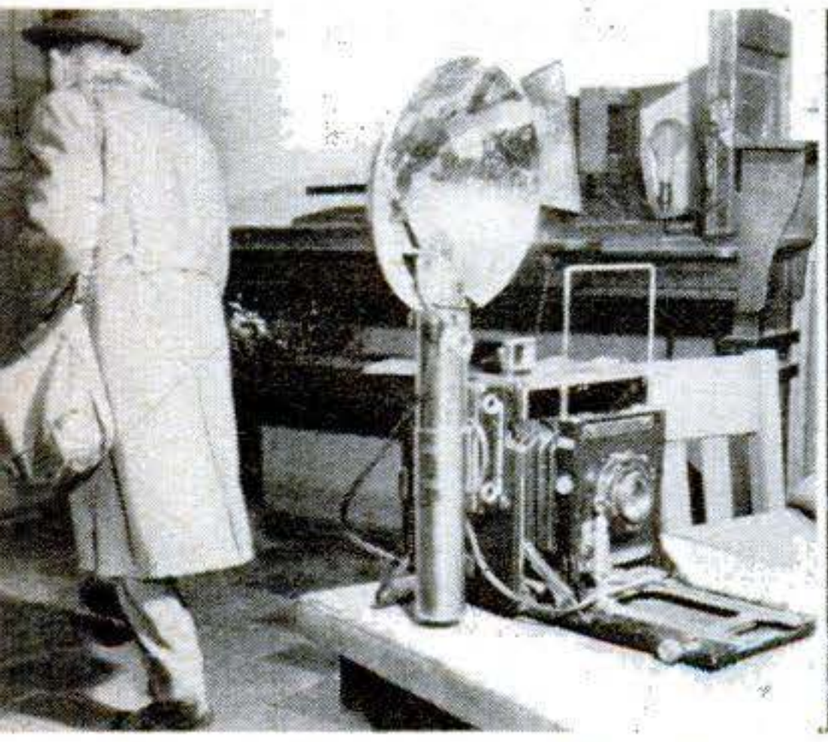
How NOT to Take Pictures

Even professional cameramen sometimes confess boners that any beginning photographer is likely to make.

FIND an honest news photographer, induce him to bare his professional soul, and you're bound to uncover several surprising bloopers. Some will be good for a laugh. Others may be downright tragic.

Staff photographers on the *Milwaukee Sentinel* are not exceptions to the rule. They are accustomed to making 12 good pictures out of 12. But they do make blunders. After surveying office history, staffers Clarence Leino and Harry Michelfelder restaged the staff's choicest slips.

"I posed for most of the boners," says Leino. "But I don't admit to them all. I don't tell which ones are mine—for I still like to eat."



Forget the camera. Throwing his bag over his shoulder, one photographer dashed off on an important assignment. Ten miles away he remembered—no camera! A no-picture result is guaranteed.

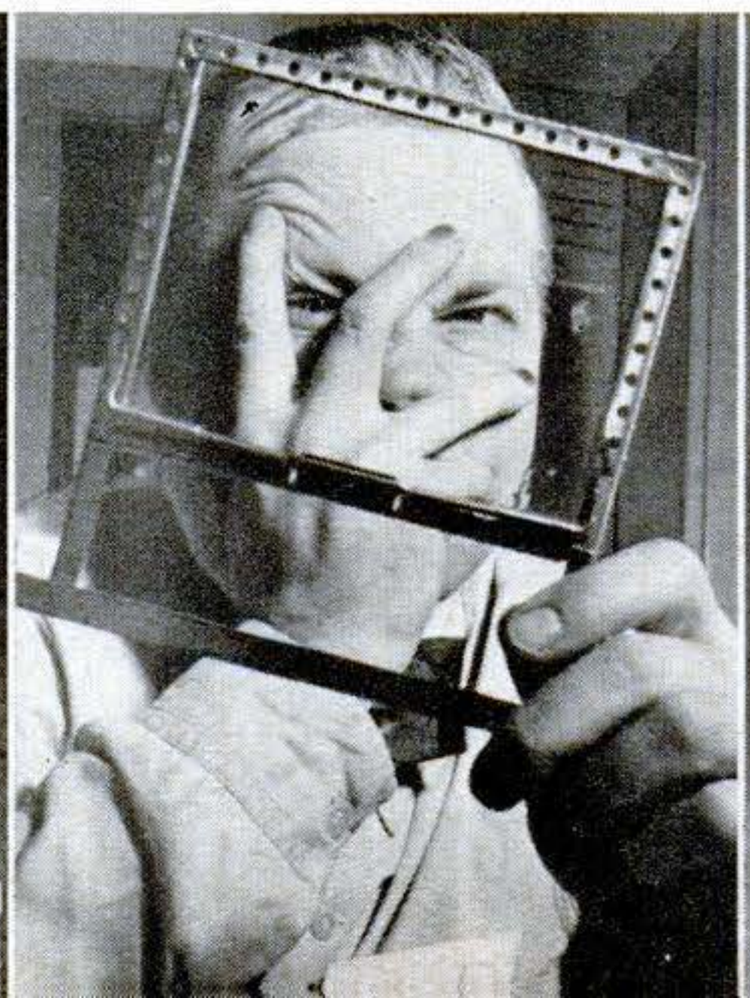
Two-headed monsters produced by double exposure are always waiting to cut a photographer's throat. Who hasn't pulled such a misbegotten image out of the darkroom soup? Be truthful now!

Leave darkroom open. Photographers knock before opening a darkroom, but scrub women don't. They may not come in shorts-clad models like this one, but they can ruin pictures just the same.

But which? Somewhere in this batch of holders is a single sheet of exposed film. No telling which one, for the photographer forgot to turn out the black side of the slide after making exposure. How can he find it? There's just one way. Develop them all.

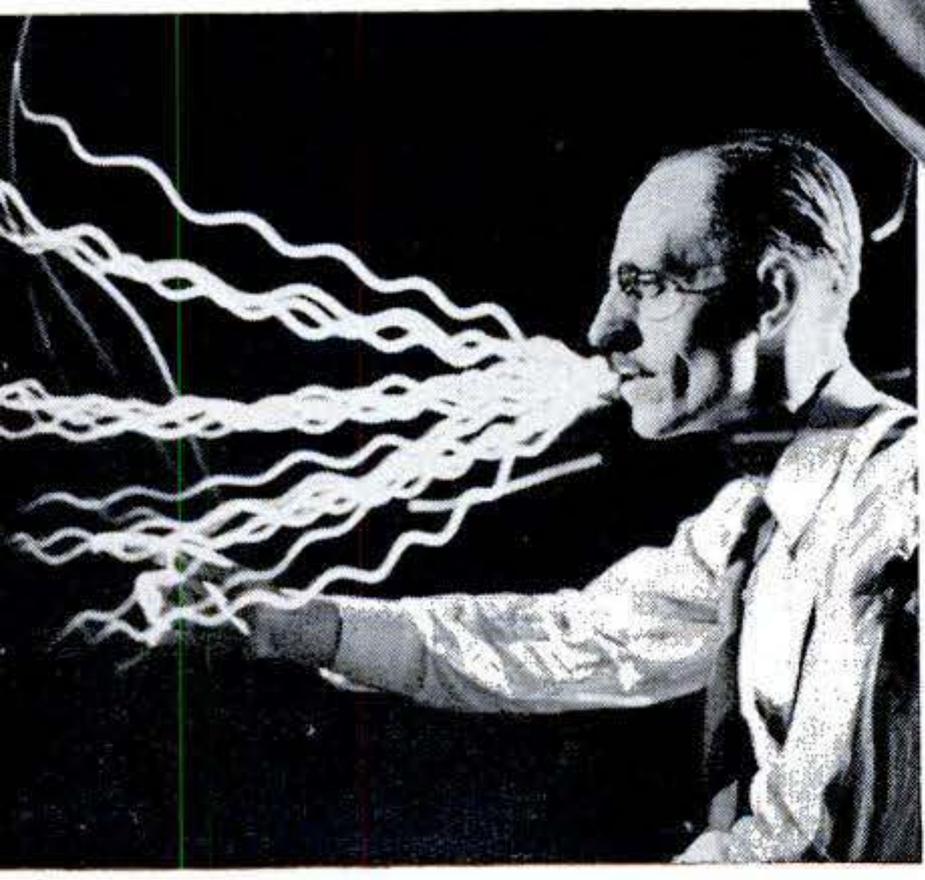
Blank negative. Clarence Leino demonstrates typical look of a cameraman on first seeing a blank sheet of film fresh from developer. A sure way to achieve this with a Speed Graphic is to leave the back shutter closed when using the front one.

A trolley did it. One photographer always had such a full bag that the film holders bounced around on top of everything else. One icy night his foot slipped and an important holder bounced into the street. A passing trolley squashed it very flat.



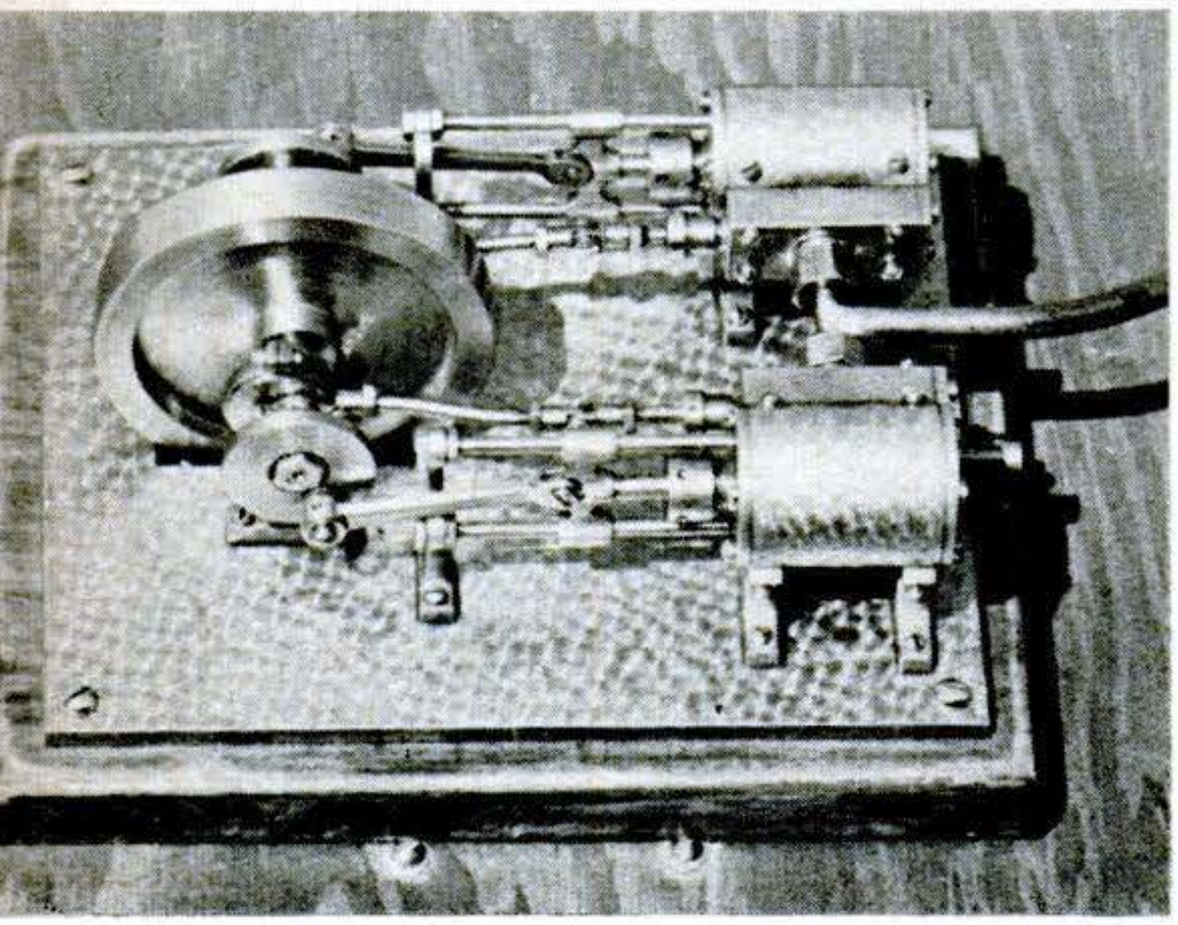
Copyrighted material

Expose the exposure. More than one man has shot a picture, only to have the lens board fall out at once because it had not been tight. Leino demonstrates this trick.

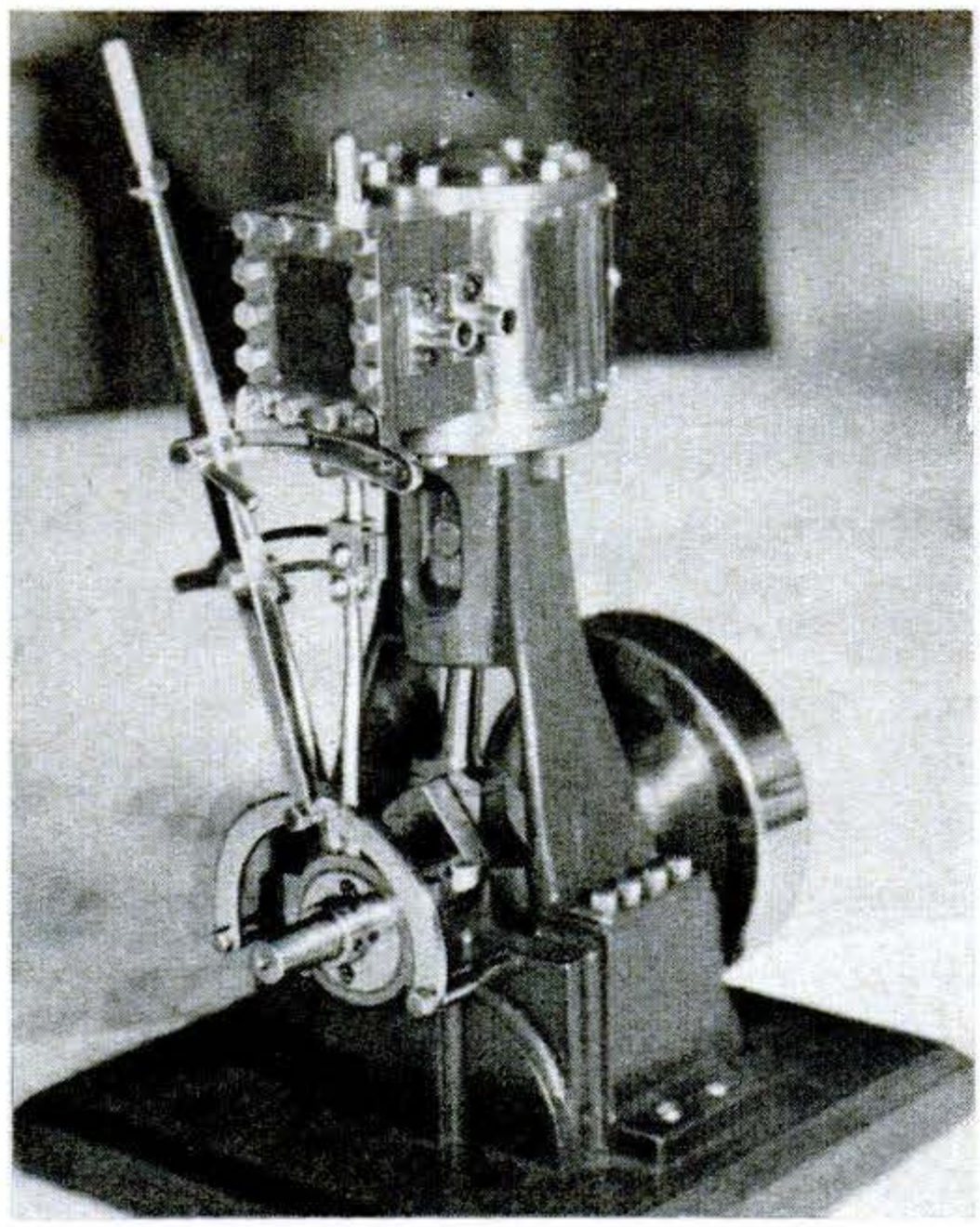


Leave shutter open and strange pictures like the one above are very easy to make. Just make an open flash, leave the shutter open, and move the room lights around or twirl the camera.

CRAFTSMEN AT WORK



Engine Built from Memory. Several years ago A. H. Fleischer of New Orleans saw plans for a two-cylinder horizontal steam engine. Recently, while stationed aboard a destroyer in the Pacific, he built this model from memory. Except for the base and crankshaft, it is all brass. It has a ¾″ bore and a ¾″ stroke and runs up to 3,000 r.p.m. on 12 pounds' pressure. Time: 125 hours to build.



Steam Power Reverses. In 1947 PSM published the plans for this vertical steam engine (bore 1¼″, stroke 1″) with Stephenson reverse gear. Five years later, John David Brubaker, a senior at Manheim Township High School, Neffsville, Pa., came across the plans. He made all the parts from scratch except the piston ring—and won a top prize in a Ford contest with the model.

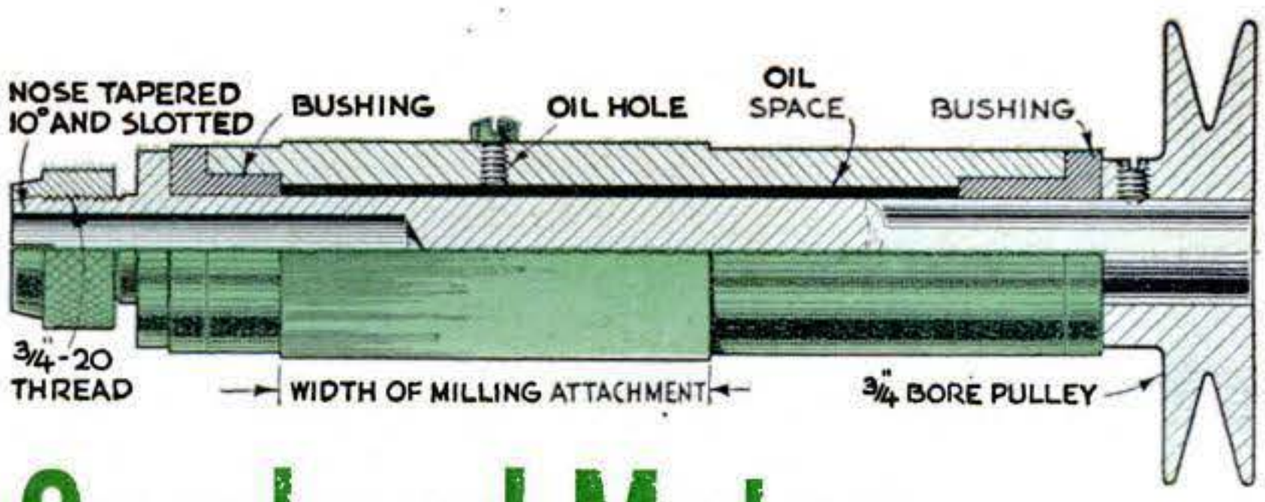
Variations on PSM Scooter. Home shops have been busy all across the country ever since that $75 motor scooter appeared in PSM (July, '51, p. 129). Here are three of the many versions built.

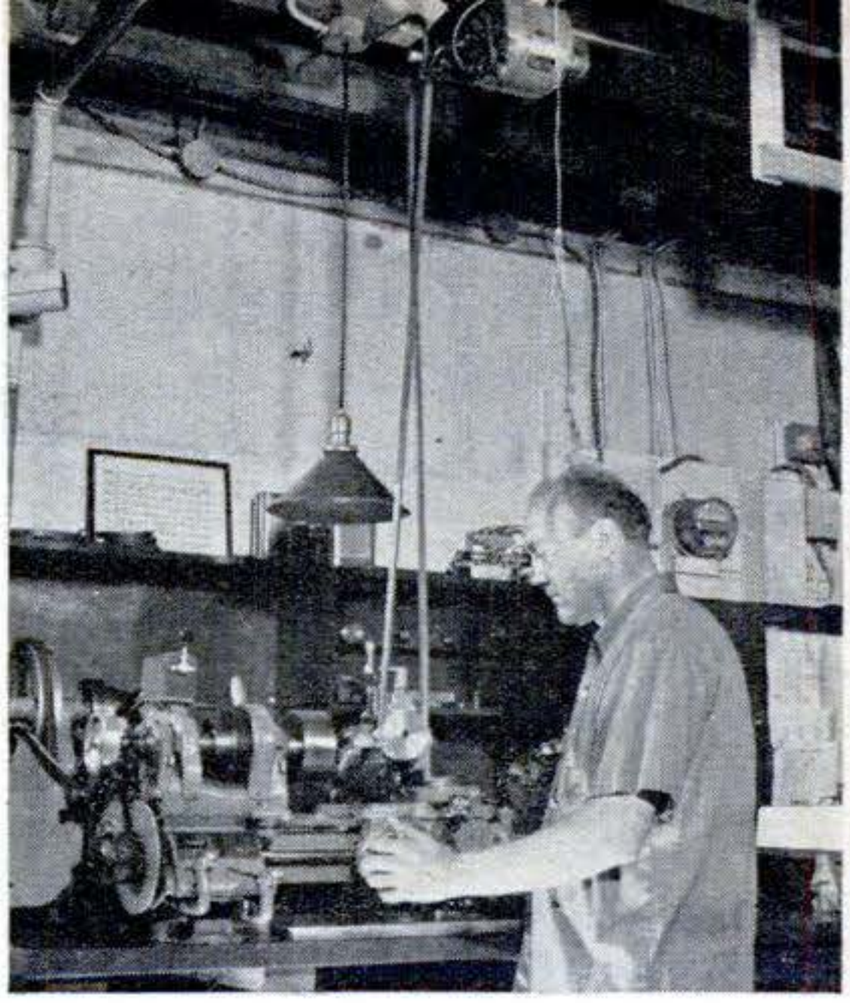
Carl Rozmarek of Chicago and his dad built theirs as a father-and-son project. They added a luggage compartment to the rear of the 1.2-hp. scooter. Its speed is 25 m.p.h.

Another model flies in a lightplane, giving easy town-to-airport transportation. S/Sgt. Eugene C. Breiner of Scott Air Force Base, Ill., built his so that the kingpin and throttle mount can be removed, making two units that can be stowed in a plane.

Tony Pisciotto of St. Albans, NYC, saw the PSM plans while stationed in England with the Air Force. After he returned to the United States, he made all the parts and assembled his scooter in three months.

Copyrighted material





Overhead Motor Drives Milling Spindle

This sturdy spindle riding in a steel body puts smooth cutting power at your fingertips.

THE king of the power tools has only one drawback: a lathe's entire cutting power is funneled through a fixed headstock. This overhead-drive milling spindle overcomes the handicap by providing smooth, chatter-free cutting power *anywhere on the lathe* that the carriage and vertical milling attachment can take it.

Long splines, flutes or keyways, otherwise impossible to cut, can be easily milled in straight or tapered shafts held between the lathe centers. The spindle chuck can take a variety of cutters and abrasive wheels to do extra duty as a tool-post grinder, horizontal boring machine or armature undercutter.

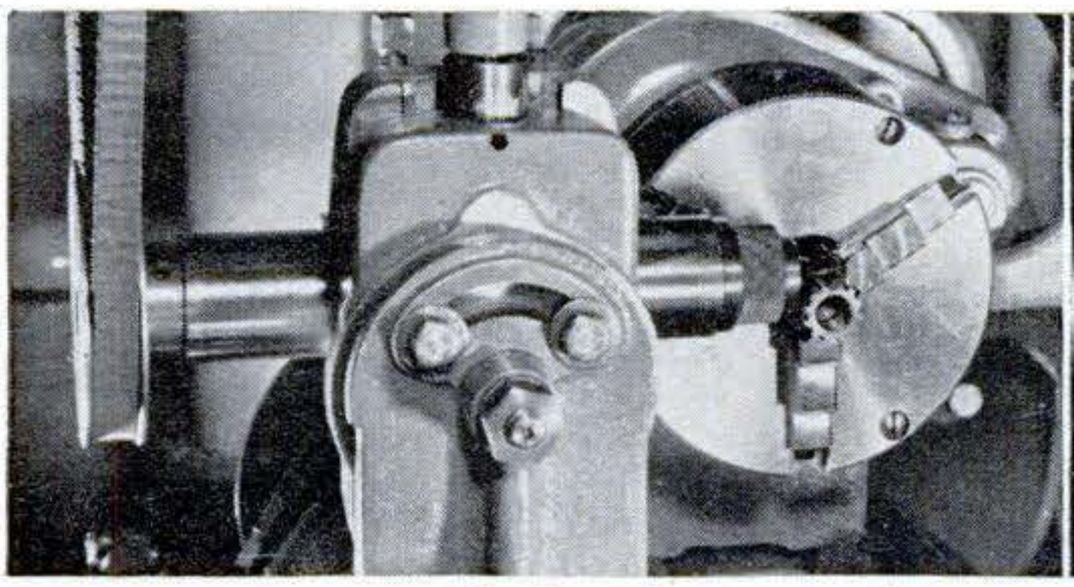
Steel body. The body was shaped from a 6″ length of 1½″ square cold-rolled steel. This was mounted between centers and both ends turned to 1 7/16″ diameter. It was then set up in the three-jaw chuck with the free end supported by the steady rest and drilled ⅞″ halfway in from each end. The ends were also faced.

Next it was clamped in the milling attachment directly in line with the lathe center, and a fly-cutter boring bar, mounted between centers, was used to counterbore one end to receive the bronze bushing. The boring bar was then reversed and the opposite end of the body counterbored. The two end bushings were turned and bored .750″ for the spindle.

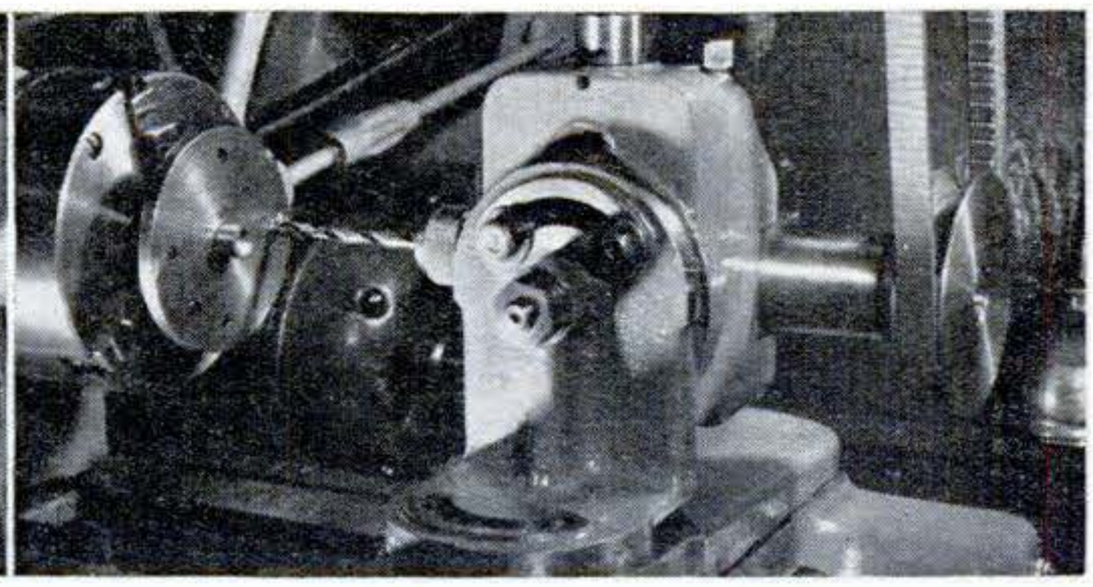
The spindle, turned from 1⅜″ cold-rolled rod, was completely finished externally while mounted between centers. The nose was threaded and tapered to 10°. The same 10° setting of the compound was used for boring the taper in the nose-tightening collar.

A piece of bronze was chucked and bored to a tight fit for the spindle, which was forced into it and bored ½″ to a depth of 2½″. The spindle was then clamped in the milling attachment and the expansion slots cut with a slotting saw.

The overhead drive consists of ball-bearing jackshaft and ¼-hp. motor bolted to a standard motor support. A 2-to-1 pulley ratio halves the jackshaft speed.—*Warren W. Lacey Jr.*



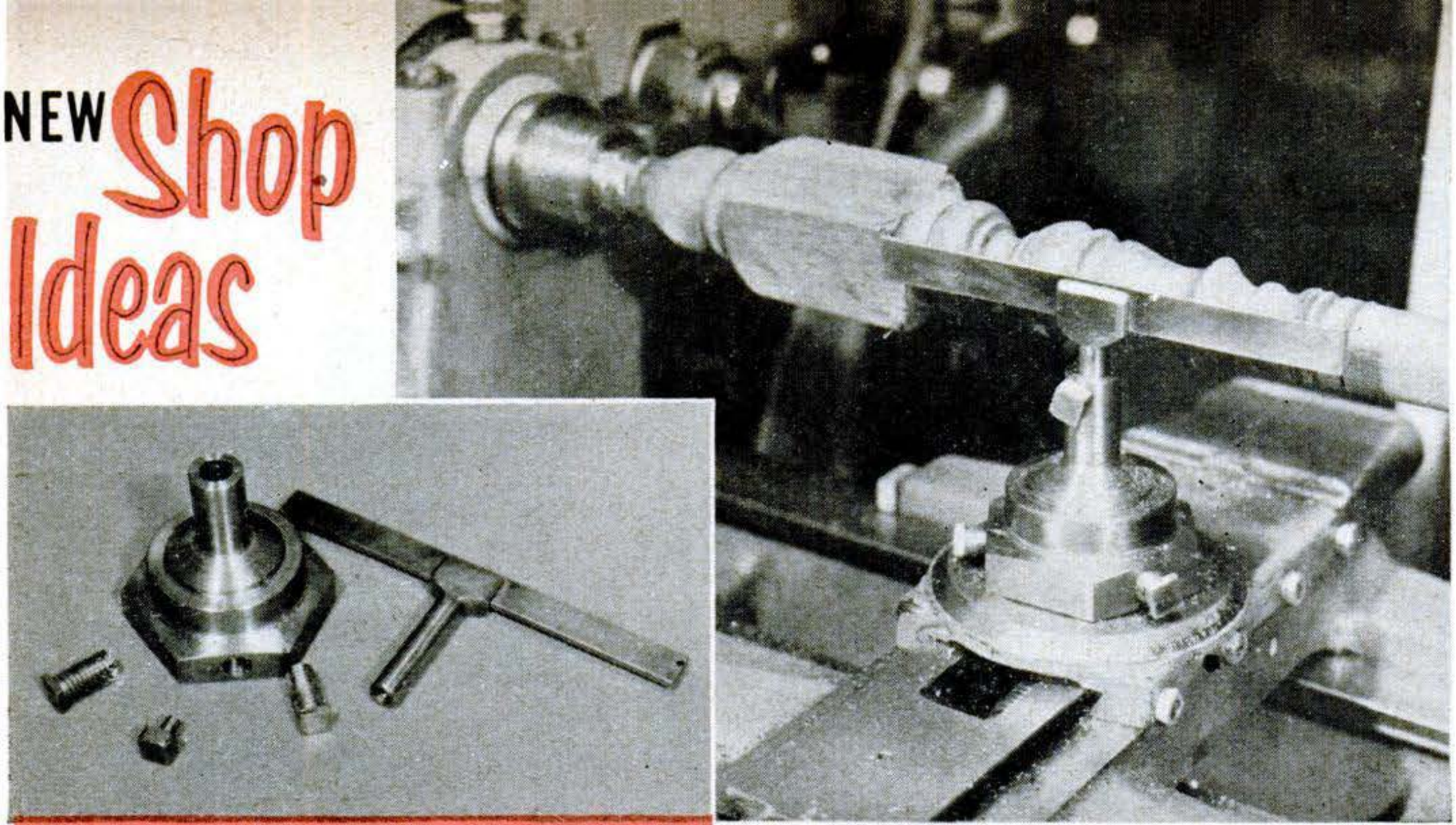
CUTTING SPLINES in shaft end is one of many milling operations performed by this spindle. Length of lathe bed is only limit to length of keyways or splines that can be cut with it. Long belt and sliding overhead-drive permit using spindle anywhere on lathe bed.

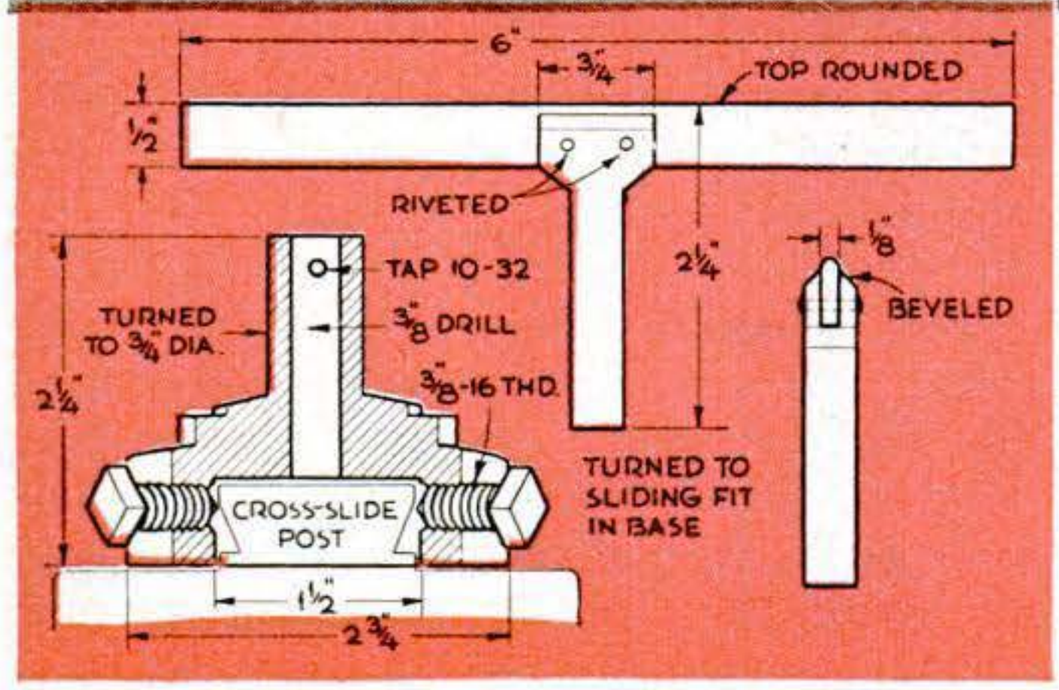


MILLING ATTACHMENT GUIDES SPINDLE up or down as needed. Turned parallel to lathe bed, it can drill holes in a perfect radius, using indexing gear on headstock to space them evenly. Oilite bronze bearings and solid construction permit heavy cuts.

Copyrighted material

NEW Shop Ideas





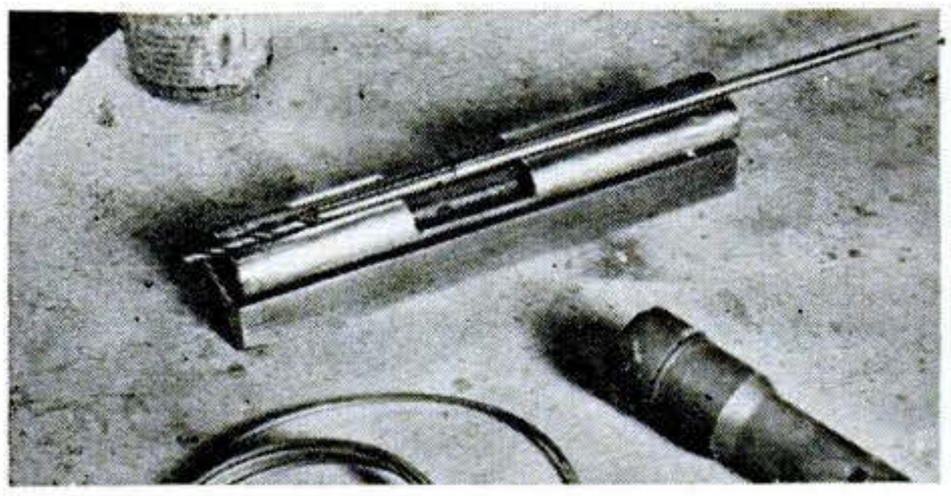
Tool Rest for Wood Turning. Occasionally the metal worker must turn out a few wooden handles or ornamental turnings. Such hand turning calls for a tool rest.

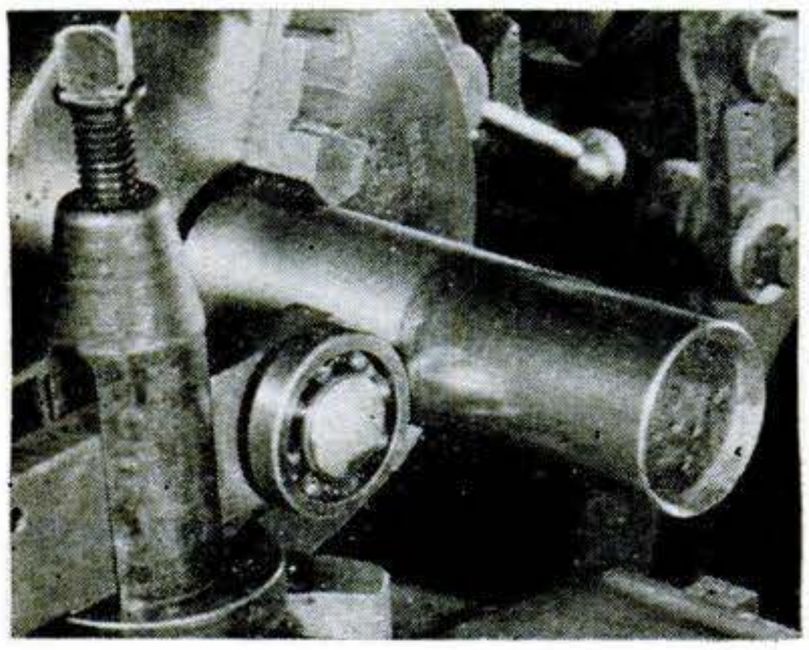
A large hex-head bolt found in a junkyard served as the base for this one. It was bored to fit over the swivel post on the cross slide and drilled 3/8" for the tee upright. If your lathe has the swivel post on the underside of the compound, duplicate this on your base. Drill and tap two holes in the base and one in the column for square-head brass setscrews.

The tee upright was turned from a 2 1/4" length of 3/4" by 3/8" cold-rolled steel mounted between centers. The top was then beveled and a slot cut with a hacksaw to receive the tool rest. Two rivets complete the tee assembly.

The top of the tee should be slightly below lathe center when set at its lowest position.—*Will Thomas, Kenmore, N. Y.*

V Block from Steel Tubing. Two short lengths of steel tubing welded or riveted to a strip of steel bar stock make a sturdy V block for the drill press. Cut away in the center, the V block becomes a useful jig for brazing. At right it holds a drill and an extension rod in perfect alignment while they are brazed together for drilling deep holes.

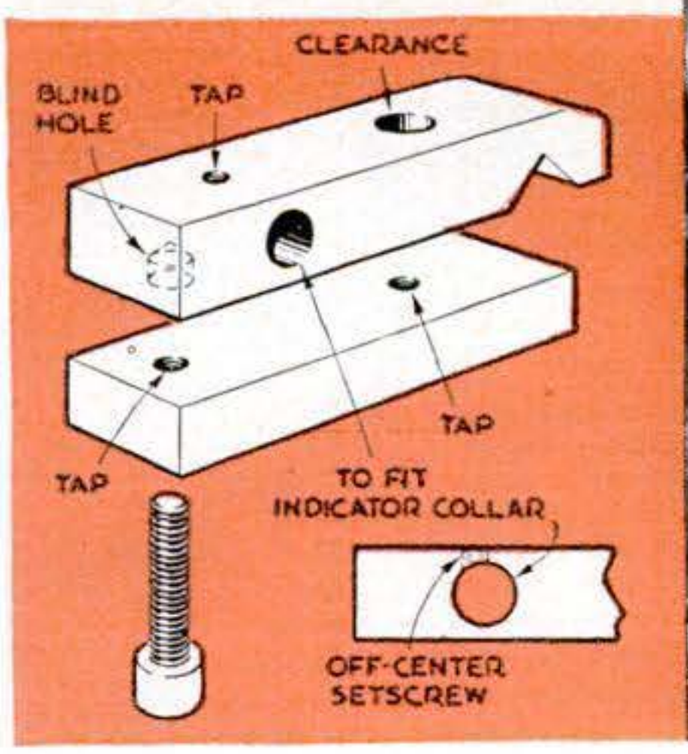


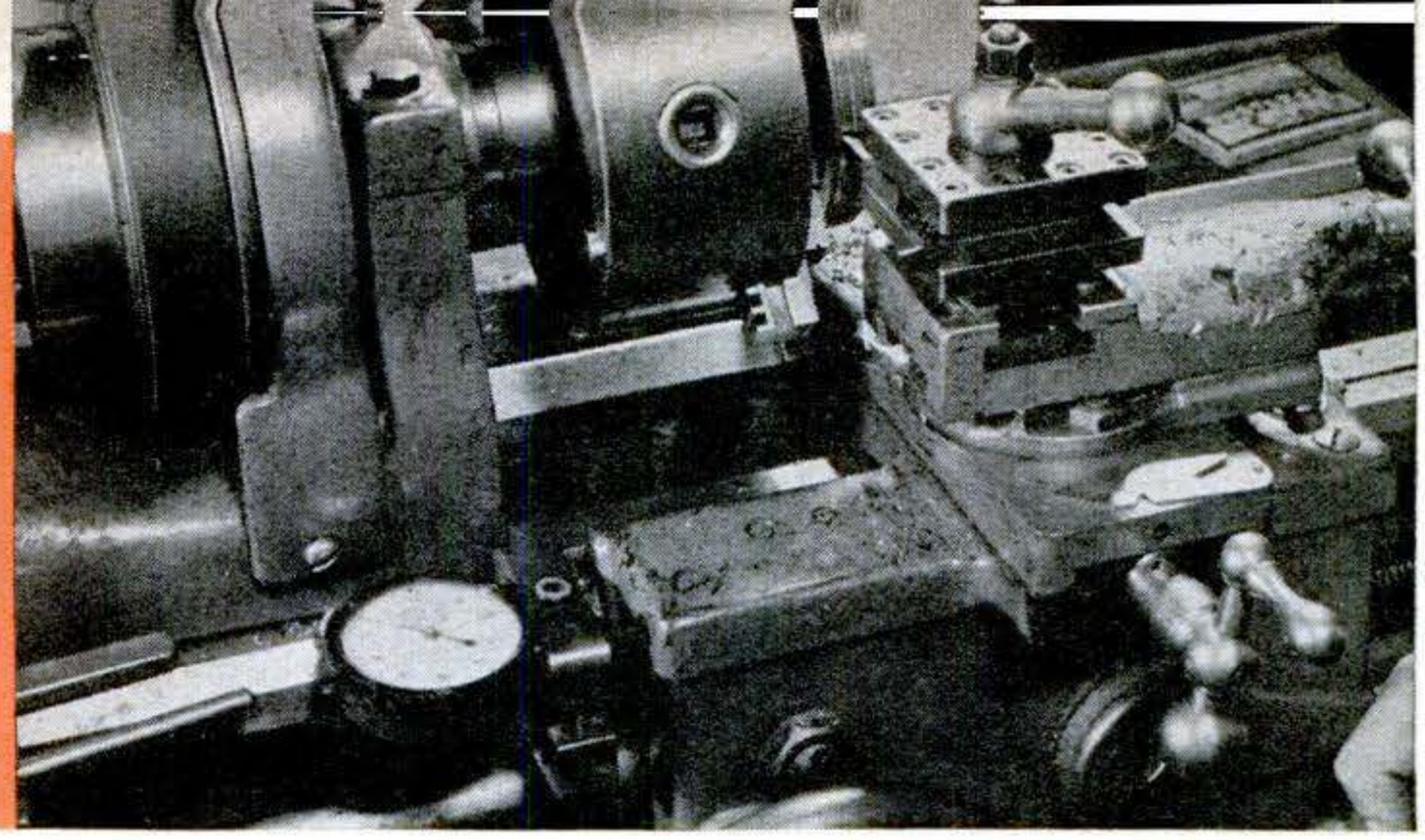


Rolling Tool Smooths Shafts. A ball bearing bolted to a steel bar will roll turned surfaces to a hard mirror finish, often eliminating the need for grinding. By work-hardening as well as smoothing the bearing surface, this process greatly lessens initial shaft wear, resulting in bearings that fit tighter after run-in.

In use the rolling tool is clamped in the tool post after the finish cut has been made, and brought up against the work with firm pressure. The diameter of work so rolled is reduced by only two or three ten-thousandths. —*Fred F. Davis, Edmonton, Alberta.*

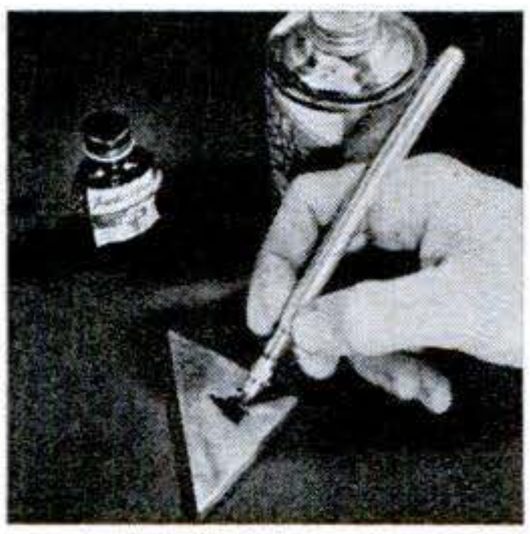
Copyrighted material





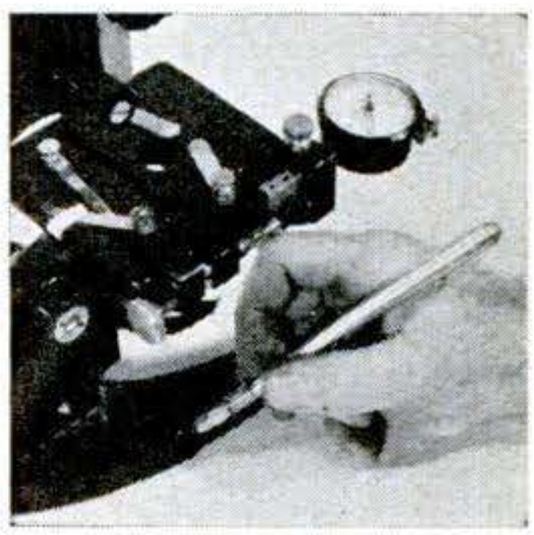
Indicator Carriage Stop. In cutting threads up to a fixed carriage stop, you have to shut off power a safe distance away and pull the belt to finish the pass. A dial indicator mounted as above will let you use power feeds for turning to a shoulder or threading right up to the undercut. The indicator should have at least ¼″ travel. Only back-geared speeds should be used.

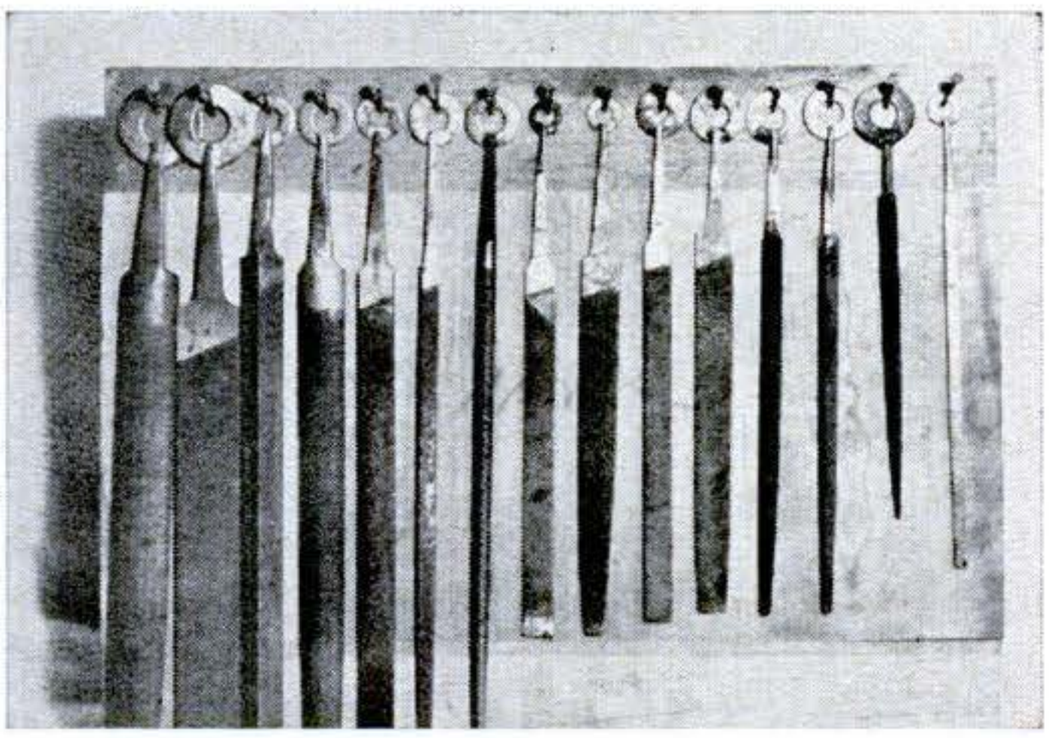
As soon as the carriage touches the stem, the needle starts moving slowly around. By throwing the half-nut lever at the same point on the indicator dial, you can stop the carriage at the identical spot every time. Feed the tool in the same amount for each pass.—*Floyd McGuckin, Ridgewood, N. J.*



Marking Pen Is Shop Accessory. Felt-tipped marking pens, the type used to mark crates for shipment, are a very useful workshop tool. Filled with layout blue (left) they provide a spillproof method of coating work surfaces for scribing.

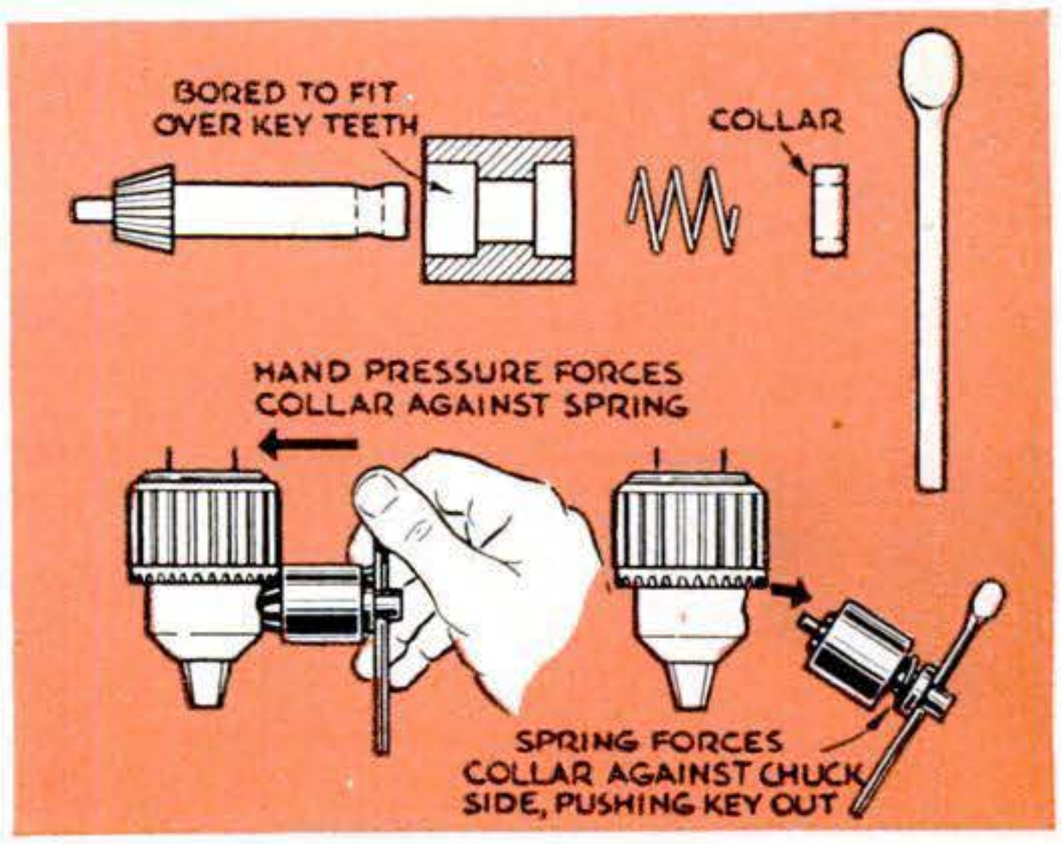
Filled with India ink (right) they make quick touch-ups over scratches on black-finished tools or instruments.





Washers Make File Handles. Solder or braze steel washers to the potentially dangerous pointed tangs of your files. They'll give you something to hold them by and something to hang them by. In addition, they will protect the palm of your hand from the point.

The flat plane of the washer in relation to the surface of the file adds a delicate feel to small files, enabling you to hold them in the correct position.—*Ray Millholland, Indianapolis.*

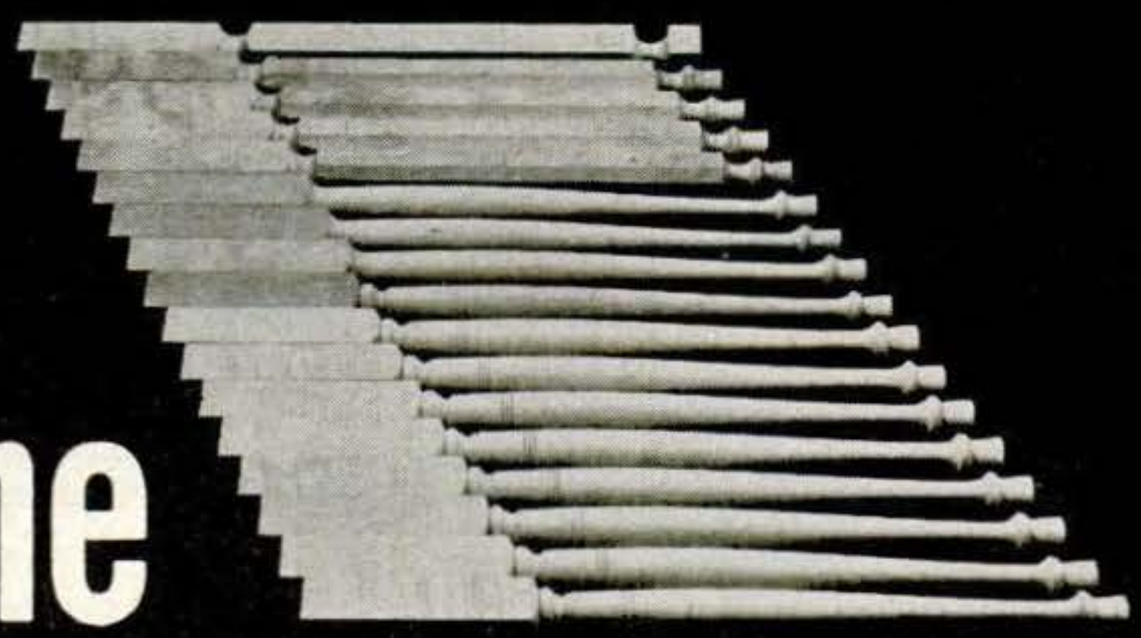


Safety Key Pops Out of Chuck. A collar turned to fit, and a light spring and washer, will convert your chuck key into a safety key that will pop out of the chuck when hand pressure is released. It also keeps your fingers out of the chuck teeth.

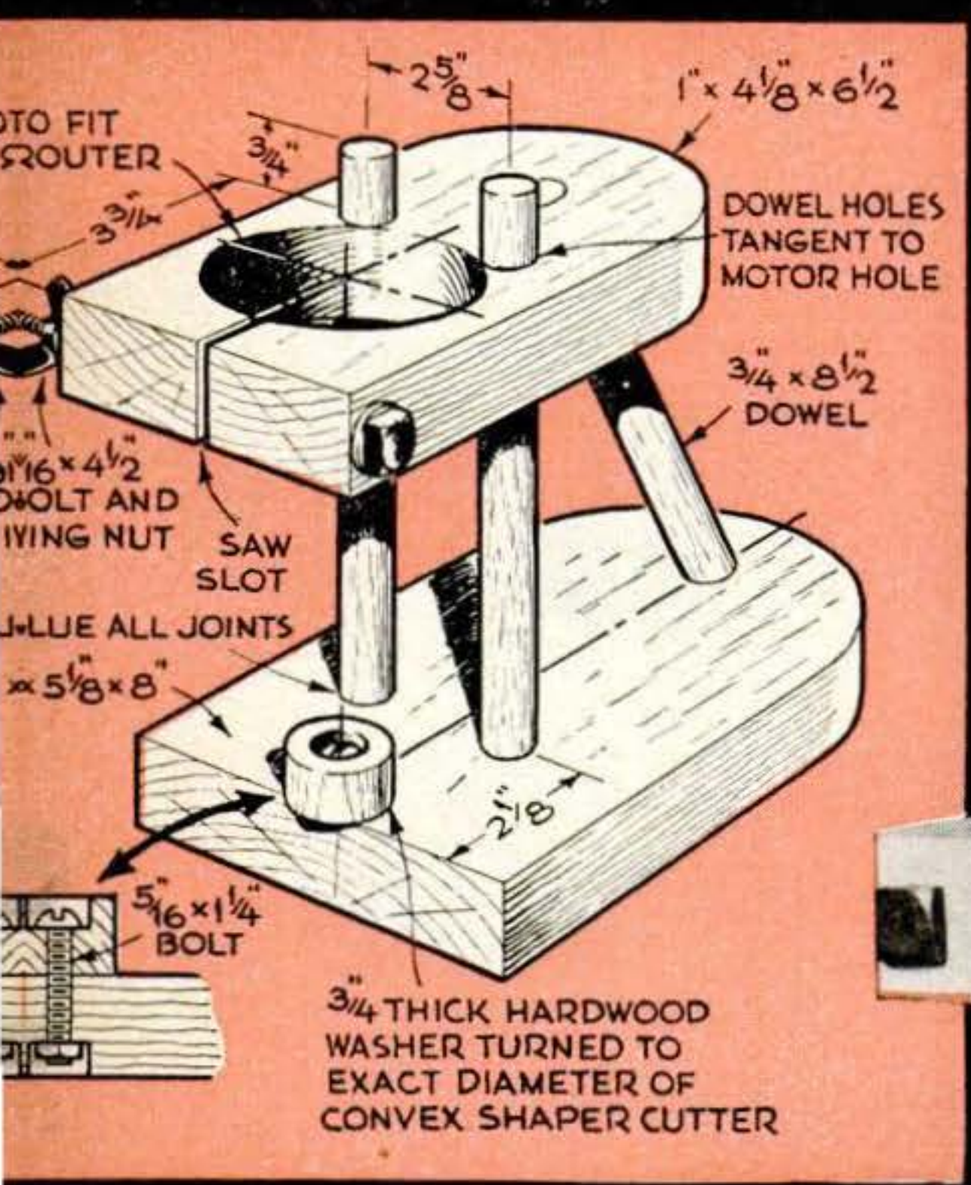
The key handle is removed and the parts slid into position. The handle is then forced into its hole, securing the assembly.—*Fred Barker, Ilion, N. Y.*

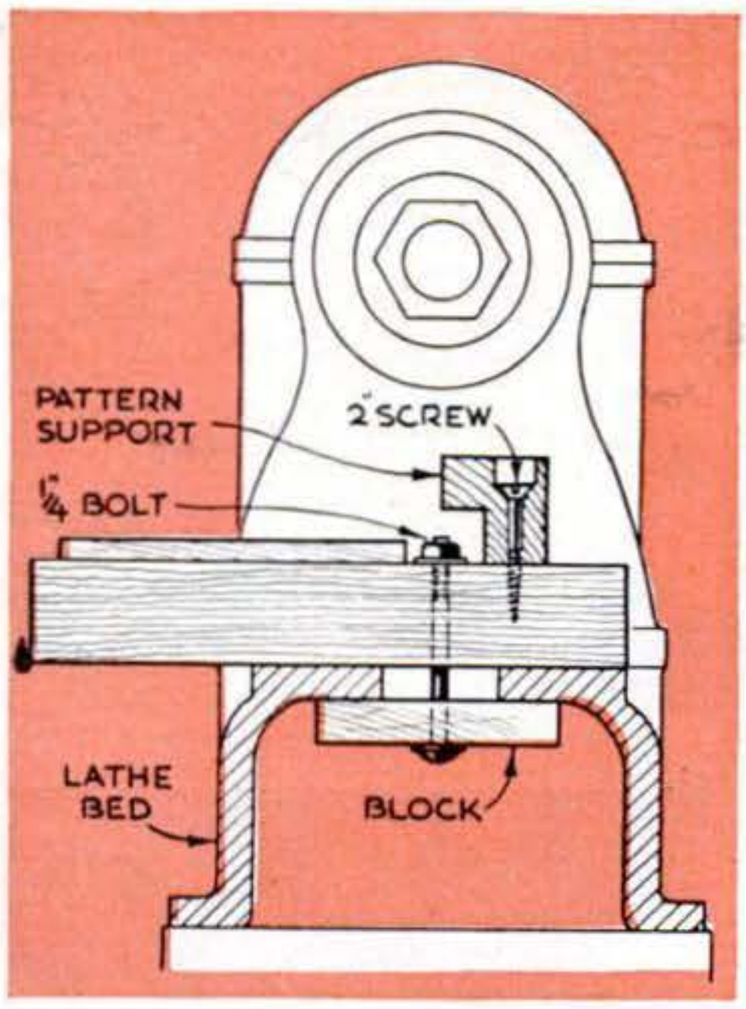
Copyrighted material

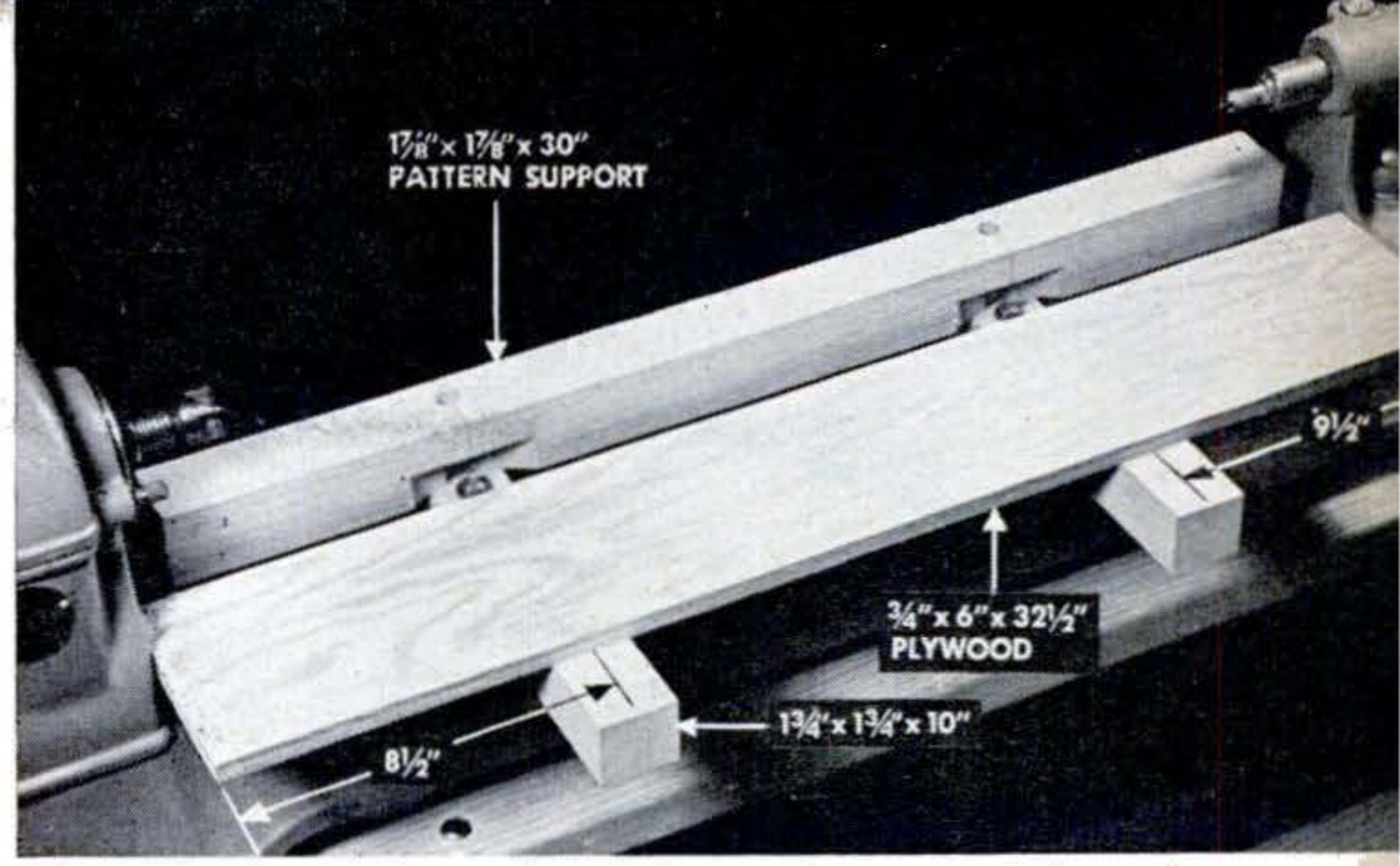
Routing in the Lathe



This ingenious rig changes two woodworking tools into a production setup that delivers identical turnings.







1 Wooden bed is fastened to lathe bed by two ¼" bolts and two hardwood blocks below lathe ways. Maple is a good wood for this. Countersunk wood screws hold pattern support to the two crosspieces. Whole rig must be rigid on lathe.

By Glenn A. Wagner

MAKING multiple turnings of identical shape is a ticklish job—even for an experienced woodworker. Long, slim, tapered table legs are especially hard to hold to dimensions by hand. But here's an easy way. You just set up your lathe for production turning.

These photos, taken while turning legs for some tavern-style tables in a home workshop, show you how it's done.

A portable router with shaper-spindle attachment and a wood-turning lathe are the basic tools. The router stand follows a pattern, turning out duplicate pieces as the work is rotated in the lathe. You can run the lathe at its slowest speed for some cuts, but the smoothest finish results when the work is turned by hand.

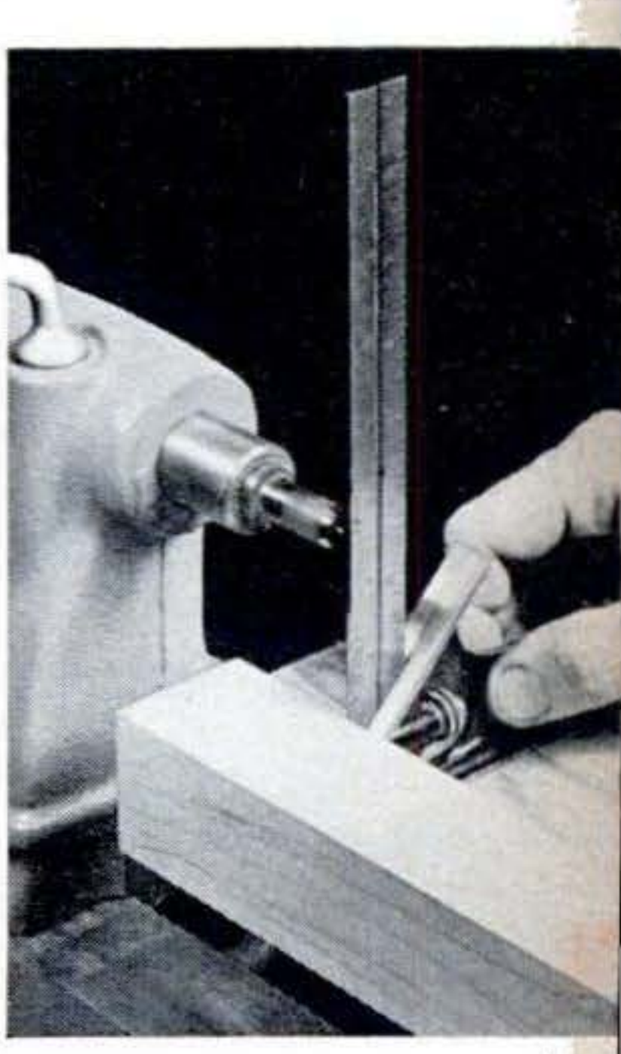
While this method of duplicating turnings saves time, it doesn't destroy the desirable handmade look of the finished piece. Some beads and coves may have to be finished by hand.

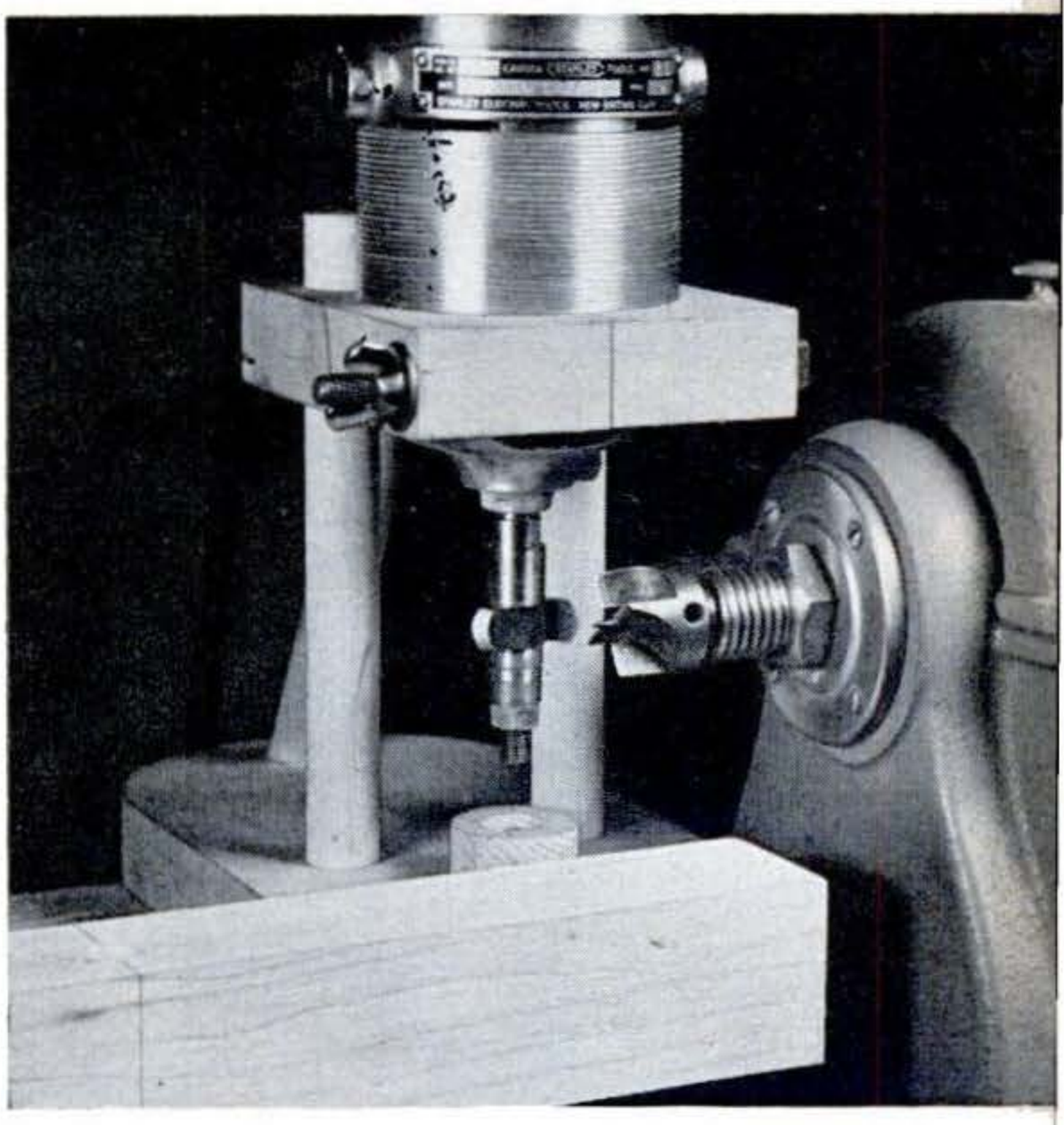
Fluting. **When you** complete a run of leg turnings, the same pattern can be reset to make a production setup for fluting the legs. Mount a fluting cutter in the shaper spindle. The lathe indexing gear is used to space out the desired number of flutes and to prevent the work from turning while the router travels along its length. A stop block at each end of the wooden bed limits the travel of the router, making all flutes identical in length.

Using this setup and a broad, flat rabbet cutter, you can mass-produce slim legs that resemble segment columns of six, eight, 10 or more sides.

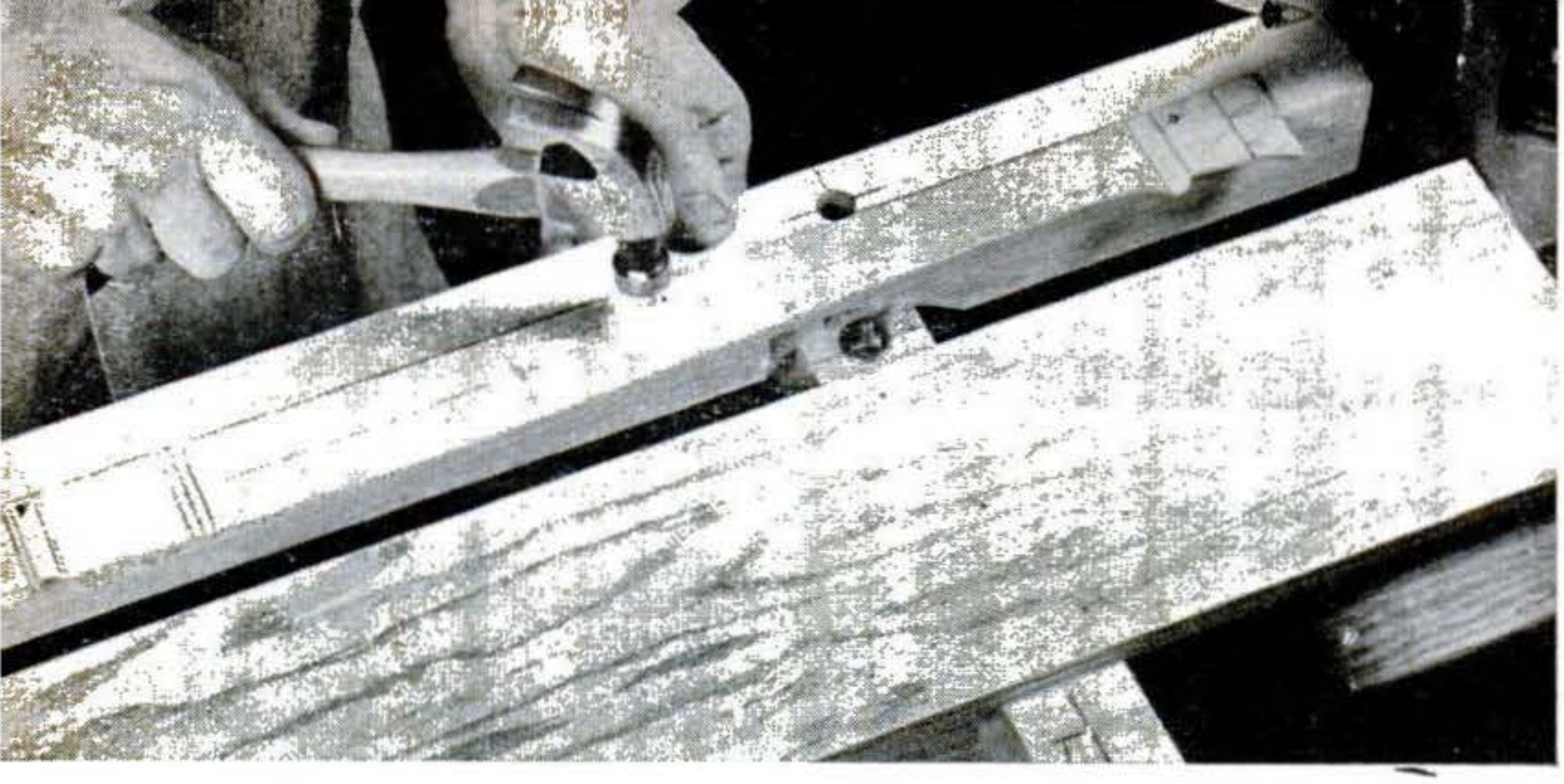
2 Front face of pattern support must be centered exactly below lathe centers. Adjust wooden bed and check with square until ends line up. Then tighten the bed bolts.

3 Shaper cutter is mounted as close to motor as possible. Adjust height of motor until center of cutter is in line with lathe center. Check to see that motor is vertical in holder and that cutter lines up with washer on base. **Please turn the page for six more photos.**

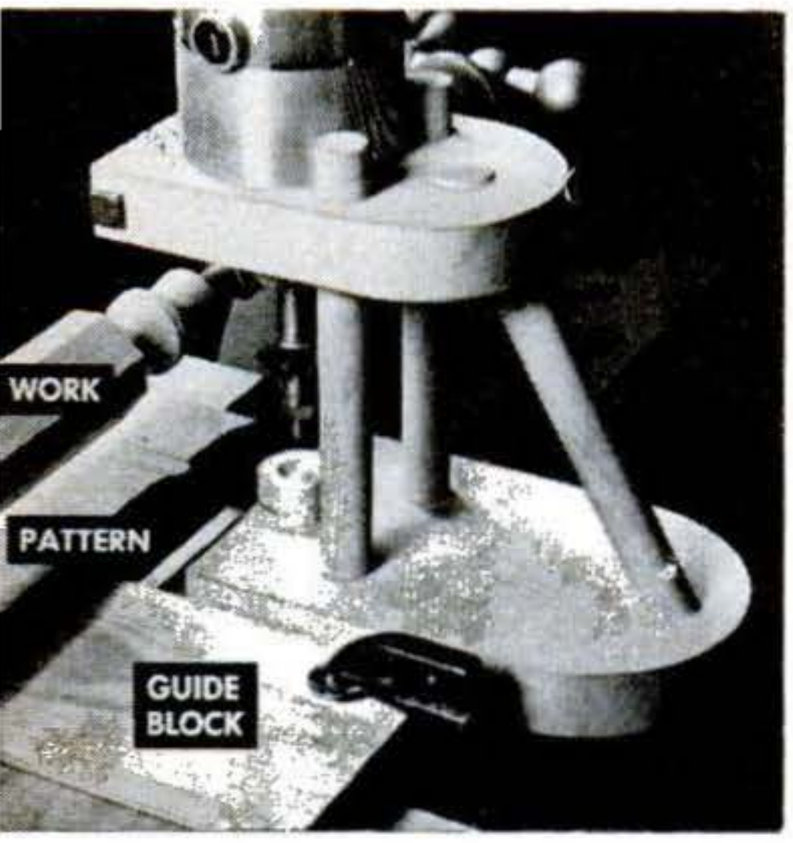




Copyrighted material

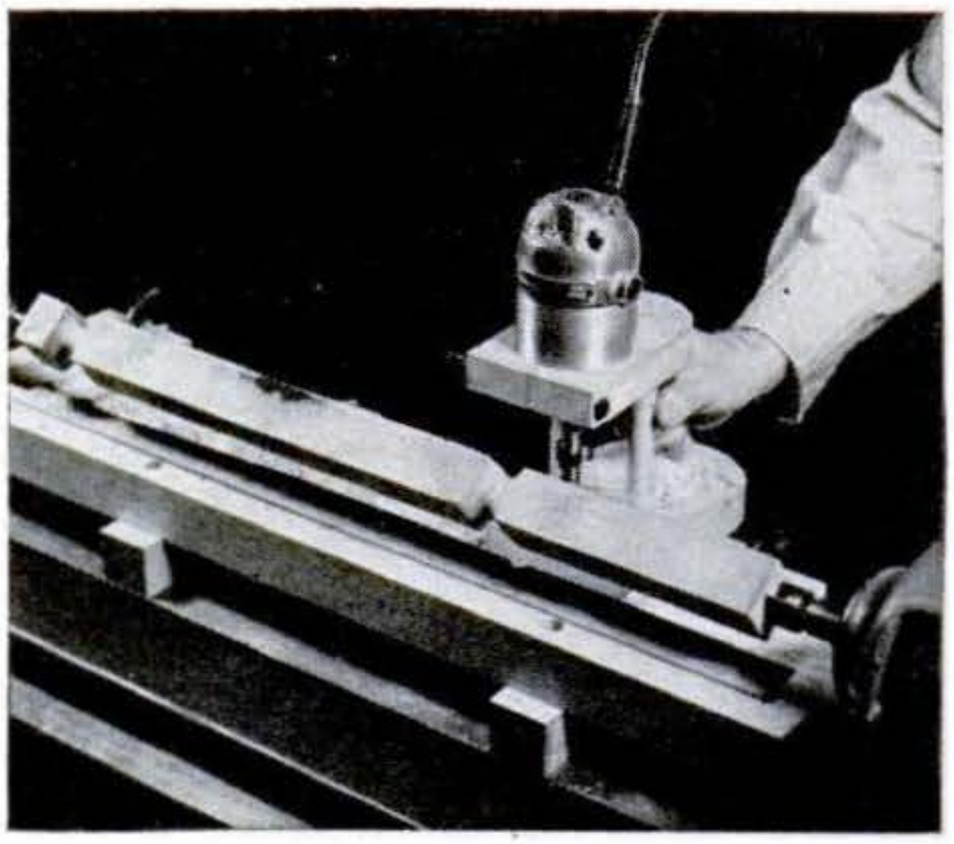


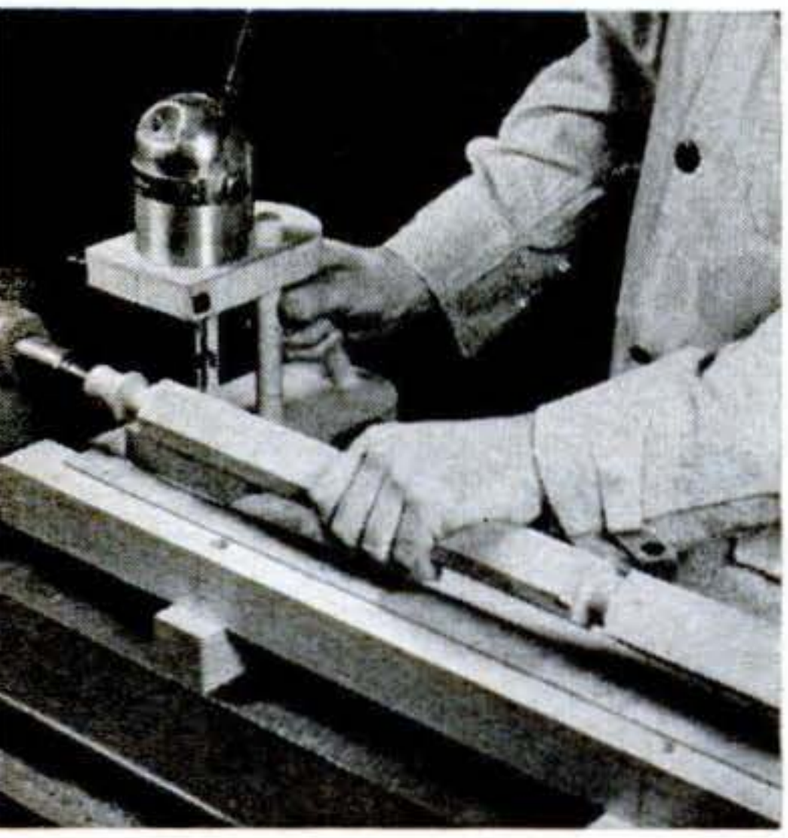
4 **Shaping pattern** can be ⅛" or ¼" hardwood plywood. Cut it about 1" longer than turning so shaper will feather off. Center the pattern between lathe centers and fasten it to the support with four small wire nails. Screws are better for long runs but nails will hold if the support is hardwood.



5 **Guide block** clamped to base (left) makes it easier to feed router straight into work for start of cut. Block isn't absolutely necessary but it simplifies making the first cut.

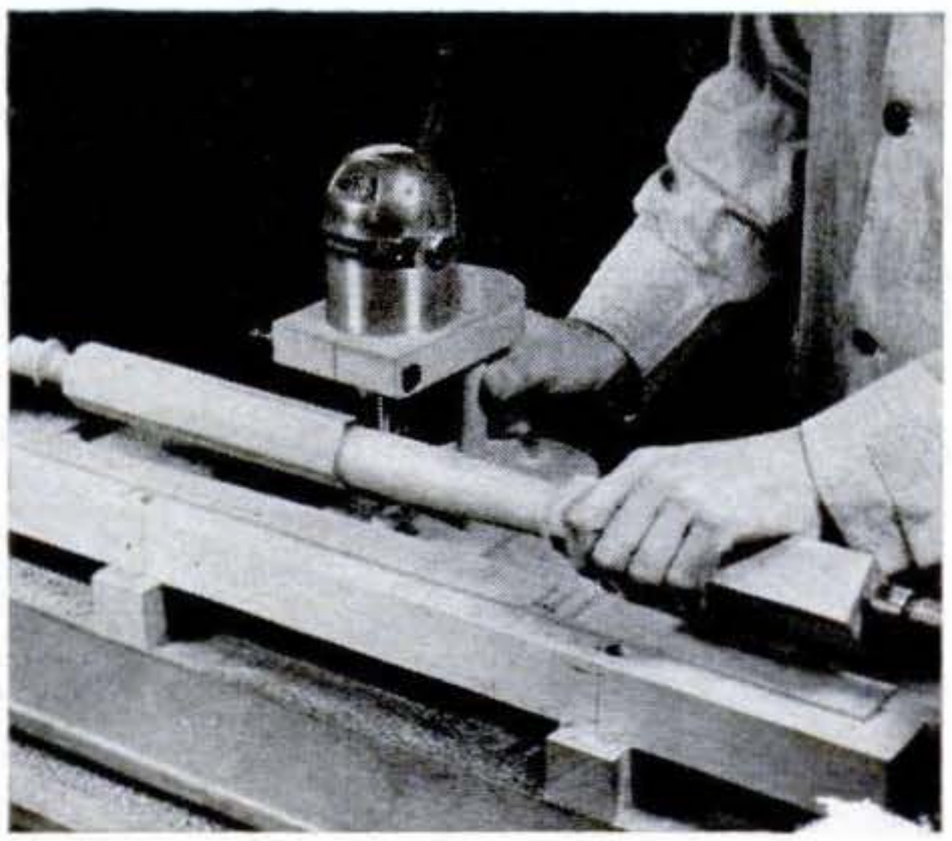
6 **First cut** was made near foot of table leg because this cut is deep. Material left on foot supports part where cutter would tend to chip work if such a deep cut were made later. Second cut was made near top of turning. Both cuts were made with lathe running at lowest speed while shaper was fed slowly into work.



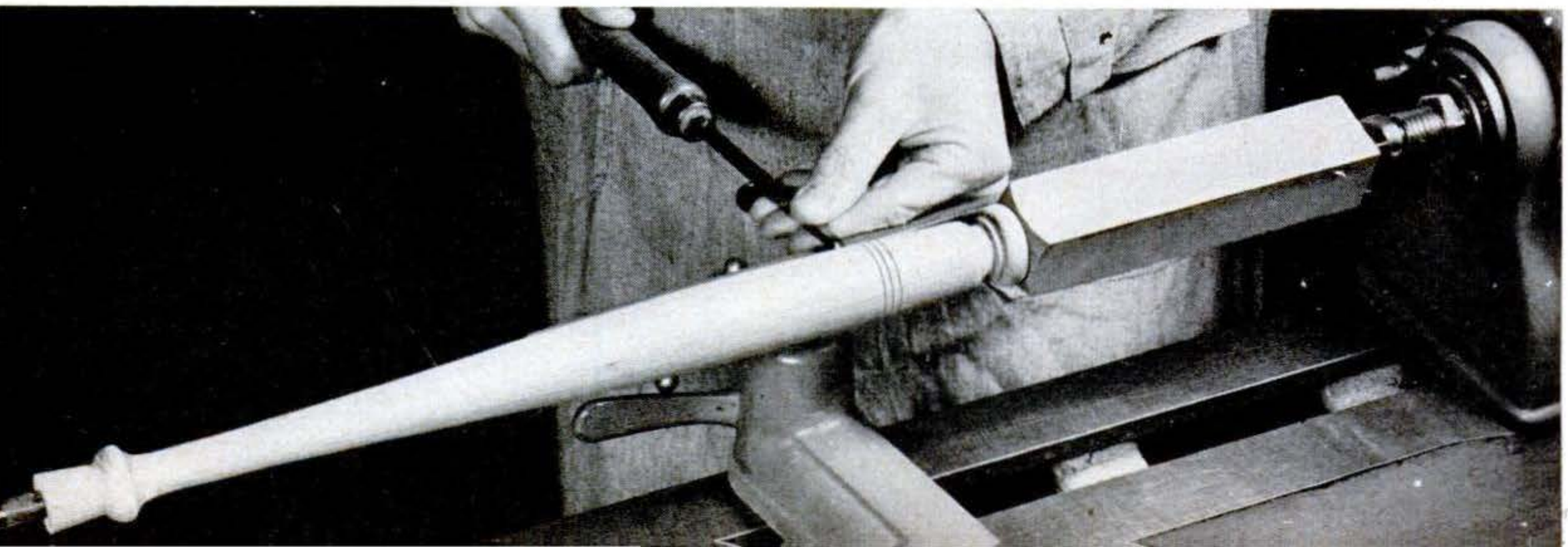


7 **Thumb and finger** guide the router stand along the pattern (left). Work is turned with left hand. Corners of stock have been cut on circular saw.

8 **Long taper** can be made after basic cuts are finished. Router is guided along pattern from headstock to tailstock as work is slowly turned by hand. Where cut will be deep, it is better to make one or two light passes to rough off excess wood. Finished cut will be a very fine spiral all along the leg.

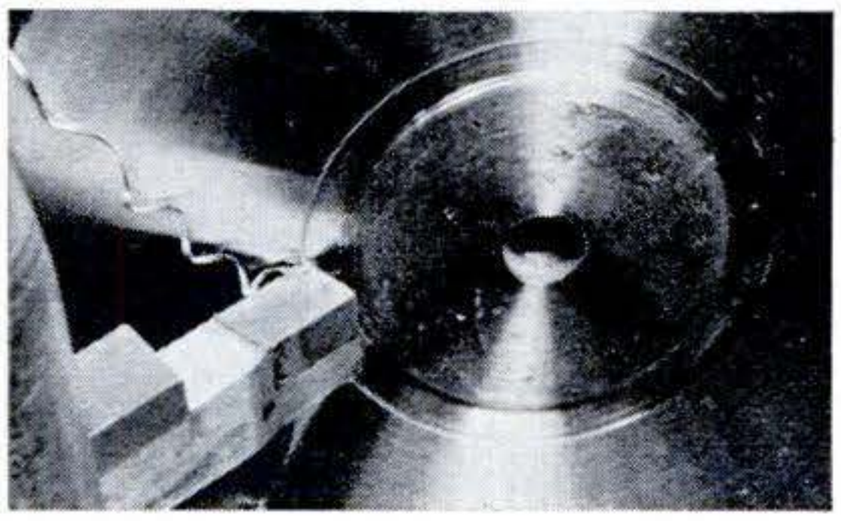


9 **Finishing** is done by hand after all legs have been shaped with router. The wooden bed is removed from the lathe and a skew chisel is used to make a scraping cut that removes the spiral left by the router. Then the leg can be sanded in the lathe to final smoothness. END



Adhesive Joins Two Different Materials by Curing Process

ADHESIVE is applied like glue, but resemblance ends there. Plastilock is cured by oven heat after solvents have air-dried to form bond that no ordinary glue can match. Carbide tip, bonded to steel bar below, withstands heat and pressure of machining stainless steel with no coolant other than cutting oil. Adhesive will bond nearly everything but rubber.



DEVELOPED originally for fastening linings to brake shoes without rivets, a new synthetic resin-rubber adhesive called Plastilock 604 is now being packaged in pint cans for home-shop use. B. F. Goodrich Co., the manufacturer, reports that the material has extremely high holding power, citing tests on plastic-to-glass joints where the glass broke before the bond did.

Plastilock comes in two forms—a tape that is laid on the surface to be joined, and a liquid that is brushed on. The liquid is best suited for all-around work. Work must be thoroughly cleaned and degreased, and the liquid adhesive applied to both the surfaces.

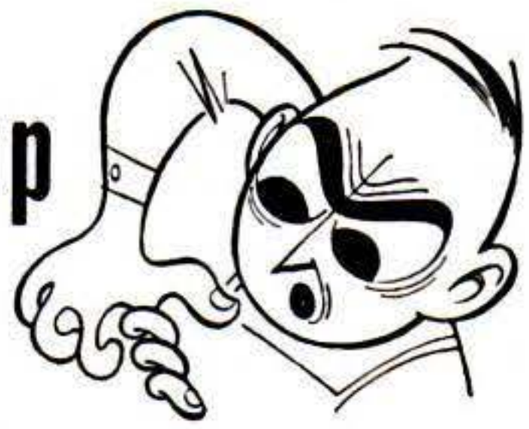
The surfaces are then joined, clamped lightly and set aside overnight while the solvent evaporates. Heat lamps will hasten the evaporation process. The work, which is now lightly stuck together, is clamped together more firmly and placed in an oven at 350° for about an hour. This cures the adhesive and the work is allowed to air-cool slowly, completing the bond.

The adhesive works equally well on metals (even difficult ones like aluminum), wood, glass, plastics and cloth. Price per pint is about $1.25.

Lampblack Lines Crucibles

MOLTEN metal and dross won't stick to a crucible if it is first given a lampblack lining. Make a paste of lampblack and water, coat the inside of the crucible, and heat it to dry the lining. After use, just dump the crucible to clean it.

Workshop Wisdom



To clean his lathe spindle, Joe Hurning
Inserted, while it was still turning,
A finger, alack,
Which he didn't get back.
To manage with nine he's now learning.

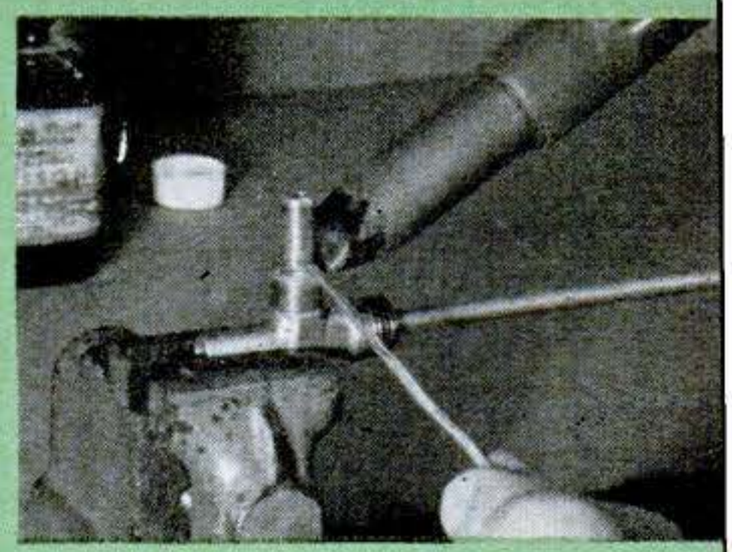
Separating Nested Elbows

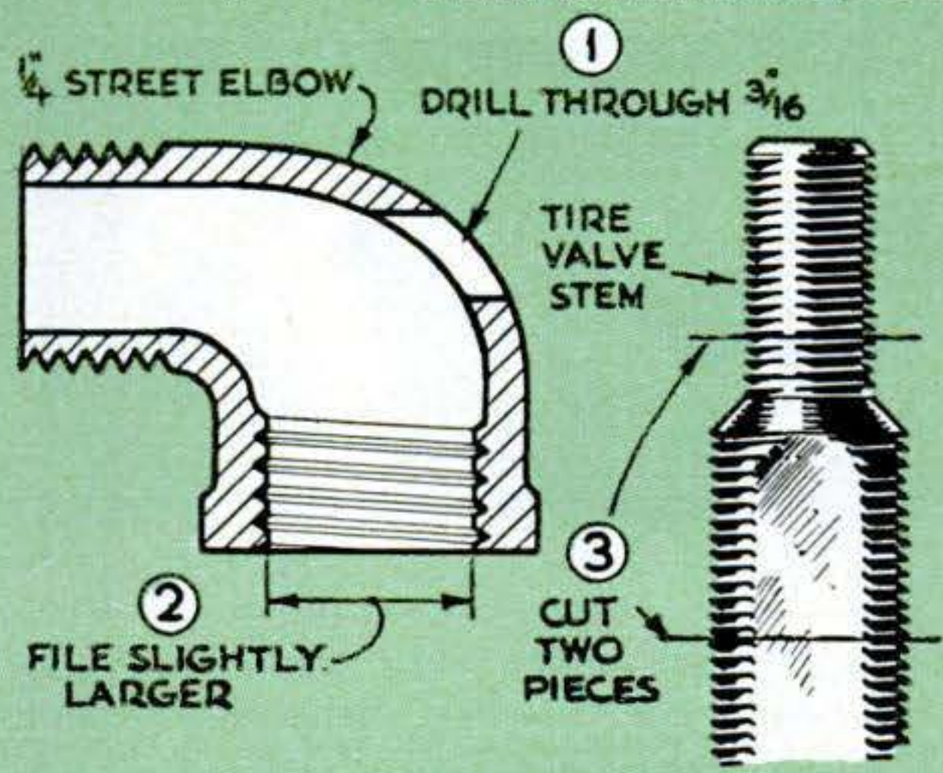
PIPE and duct elbows come from the factory in a ring or nest as shown above and must be sprung apart by force. The sharp edges make this an awkward and dangerous job to do by hand. If you buy elbows so packed, you can avoid the possibility of a bad cut by laying the nest on the floor and kicking with a heel against one of the joints until the elbows fly apart.—*Cornelius Oster Jr., Rushville, Ind.*

Copyrighted material

WORK SITTING DOWN. With this foot-operated outfit, both hands are free to handle the work and the gun. Foot pump is less tiring than a hand pump. The outfit can be used anywhere.

TWO-WAY FITTING puts air in at one end, takes it out at another for smoother flow. It's made from a standard elbow. Pieces of valve stem take couplings on pump, gun hoses.





Foot-Powered Tire Pump

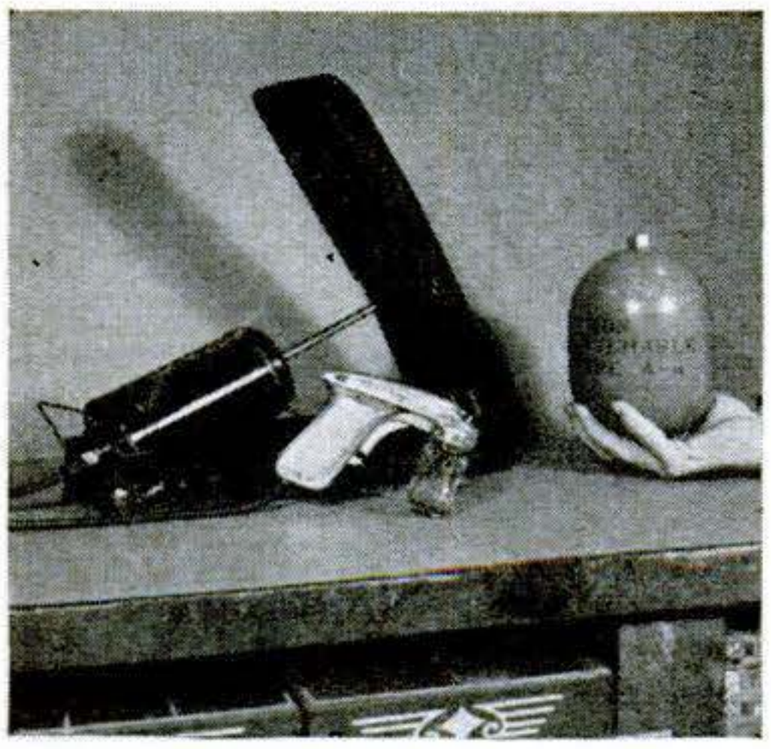
This outfit is ready to go to work anywhere. It costs less than $10, even if you must buy all the parts.

ALTHOUGH I own a husky compressor and spray gun, I always used a brush to do touch-up jobs or paint models and other small articles. It just takes too long to clean the gun after a small job—almost as long as if I had sprayed a house wall.

With this foot-pumped outfit I can spray anything from a toy car to wrought-iron furniture, and put the gun away before you can say "clean the brush."

I simply screw on a jar that I've chosen from a battery of extra jars filled with the most-used colors. When finished, I substitute a jar containing thinner, blowing a bit through the gun to clean it. Using lacquer this way, I can finish metal from primer to gloss coat in 30 minutes.

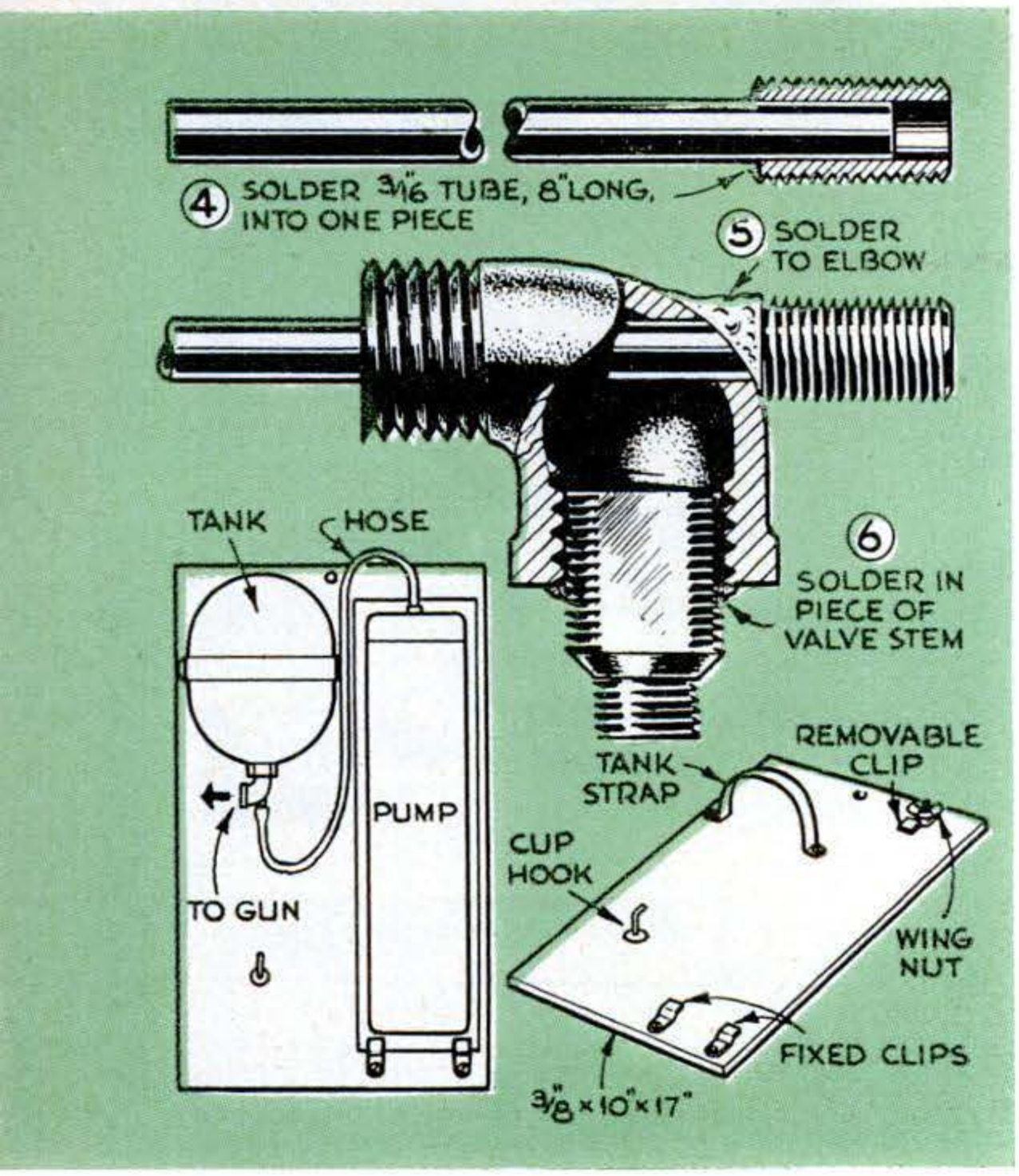
Buy ready-made parts. The gun is a simple atomizing type with a trigger valve, sold at auto-supply stores. Any tire pump could be used. A foot-operated one leaves both hands free and is easier on the biceps.



MAIN PARTS are a tire pump, a small spray gun designed to work with air from an auto tire, and a cheap war-surplus oxygen tank.

MOUNTED ON A BOARD, outfit is hung up when not in use, gun and all. Pump can be detached when needed elsewhere by loosening a clip held by a wing nut and unscrewing the hoses.

Copyrighted material



Sprays Paint

To smooth out the air flow and keep the gun spraying on the up stroke of the pump, a chamber of some sort is needed.

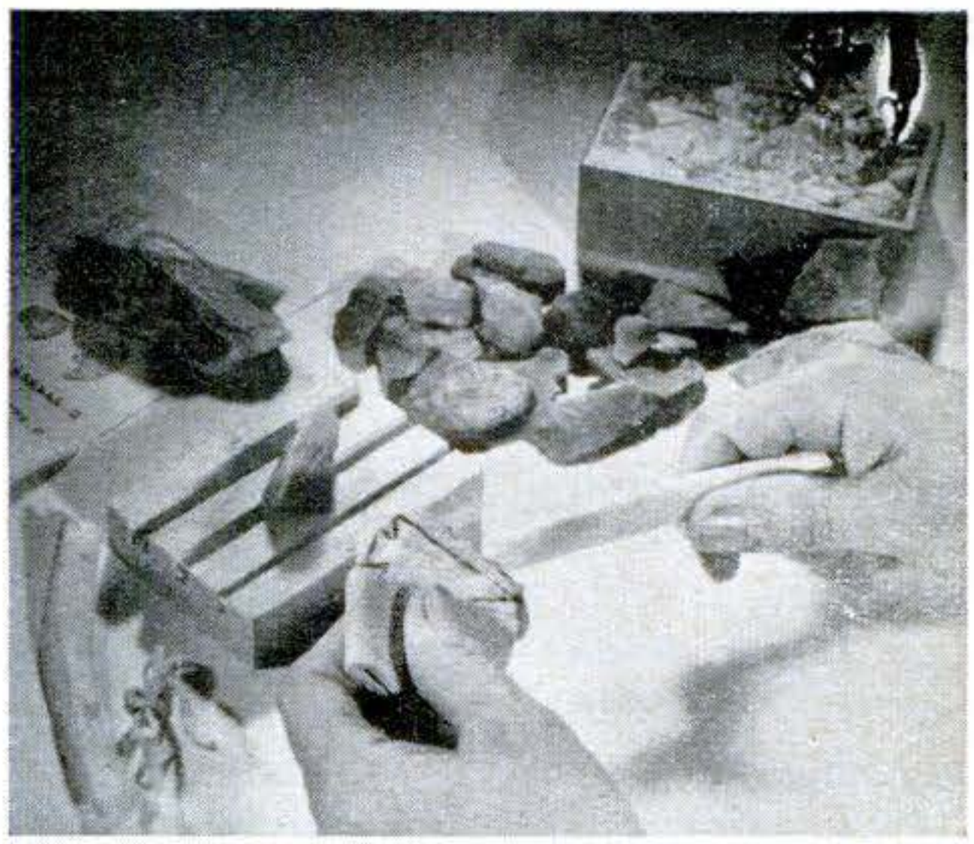
This could be an old aerosol bomb, a piece of large pipe capped at both ends, or any other container that will stand moderate pressure. I settled for a 104-cu.-in. surplus oxygen tank, available for less than two bucks.

Assembly is simple. Both the pump and the gun are connected to the tank. But with a simple tee in the single tank opening, air streams directly across and pressure drops three pounds between strokes. The homemade fitting shown reduces this drop by half. It's made by soldering parts of a valve stem and a piece of tubing into a ¼" street elbow. No rethreading is necessary.

Using the outfit. The jar that came with the gun is only 1½" high. To use higher jars, I slipped a piece of rubber tubing on the spray tube so that it reaches the bottom.

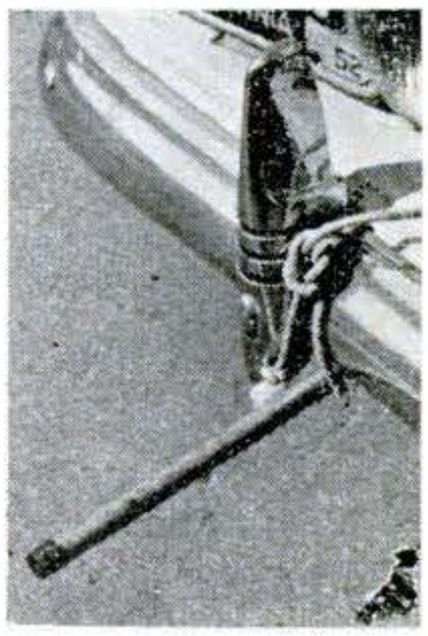
Paint must be thinned for spraying, and tests should be made on scrap to determine the proper consistency. Since thinners are inflammable, work should be done only in a well ventilated place, away from fire.—*Howard G. McEntee, Ridgewood, N.J.*

Kit Makes Flint Arrowheads



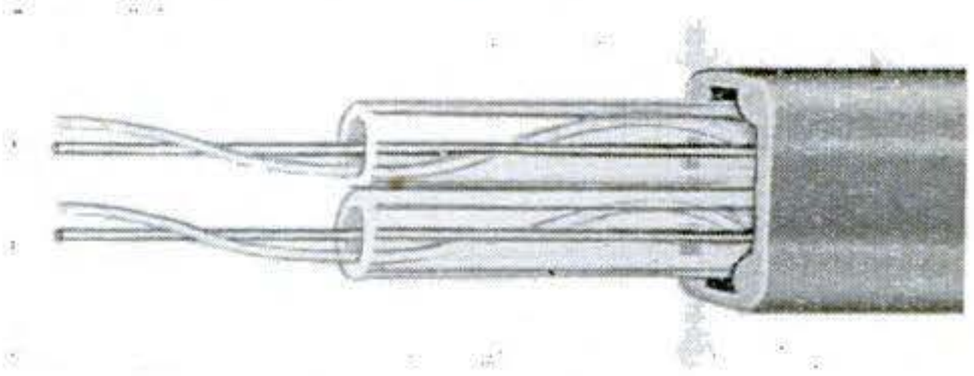
EVERYTHING needed to turn out real arrowheads and spearheads is contained in this kit. Included are bone tools for shaping flint, a grooved block to hold flints, and rawhide to tie heads to shafts. It is available from C. W. Handel Associates, 171 Neal Ave., Newark, Ohio.

Pipe Carried Under Car



TO PROTECT your car's paint and chrome when you carry long lengths of pipe or lumber, hang them beneath the car. Tie the pipe or boards to the bumper guards as shown at right.—*Clinton R. Hull, Costa Mesa, Calif.*

New TV Lead-In Handles UHF

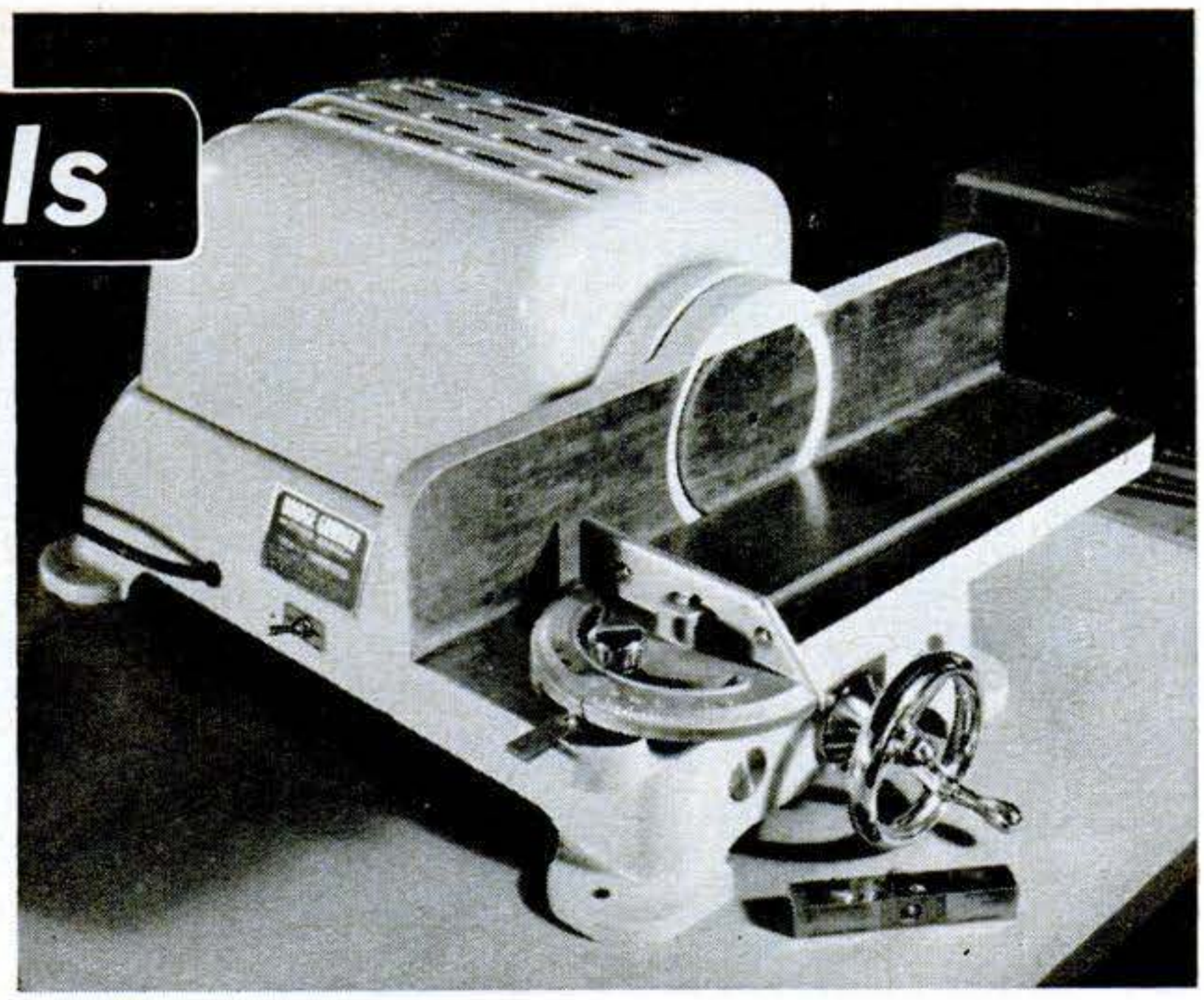


A NEW all-weather TV lead-in line, ATV-270, developed by RCA engineers and Anaconda Wire & Cable Co., is said to meet all the requirements for the reception of ultra-high-frequency broadcasts.

The high-strength copper wire is surrounded by a polyethylene spiral thread which centers it in a plastic tube. The twin tubes are encased in a brown plastic jacket that gives them complete protection against dirt, water and weather.

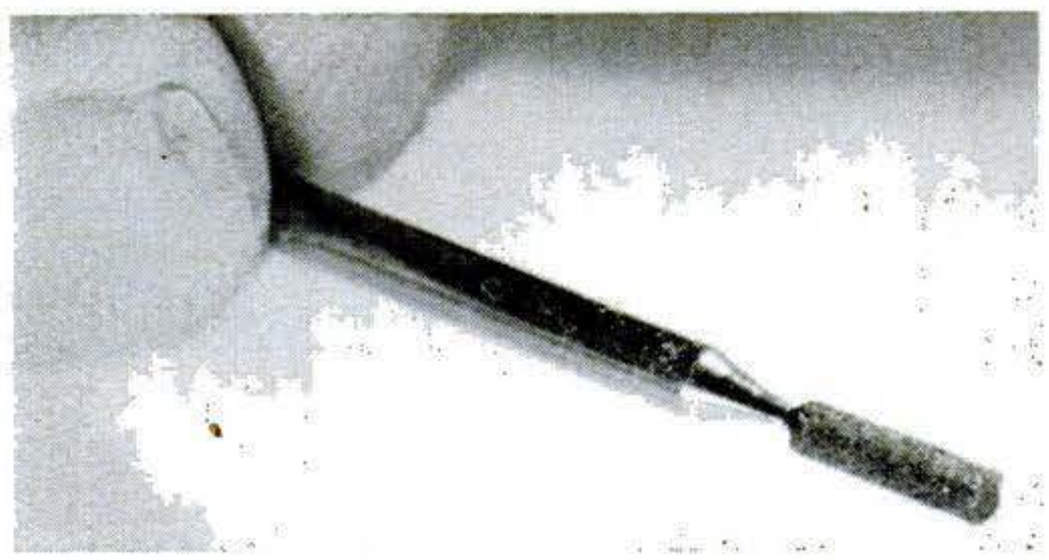
Copyrighted material

New Tools

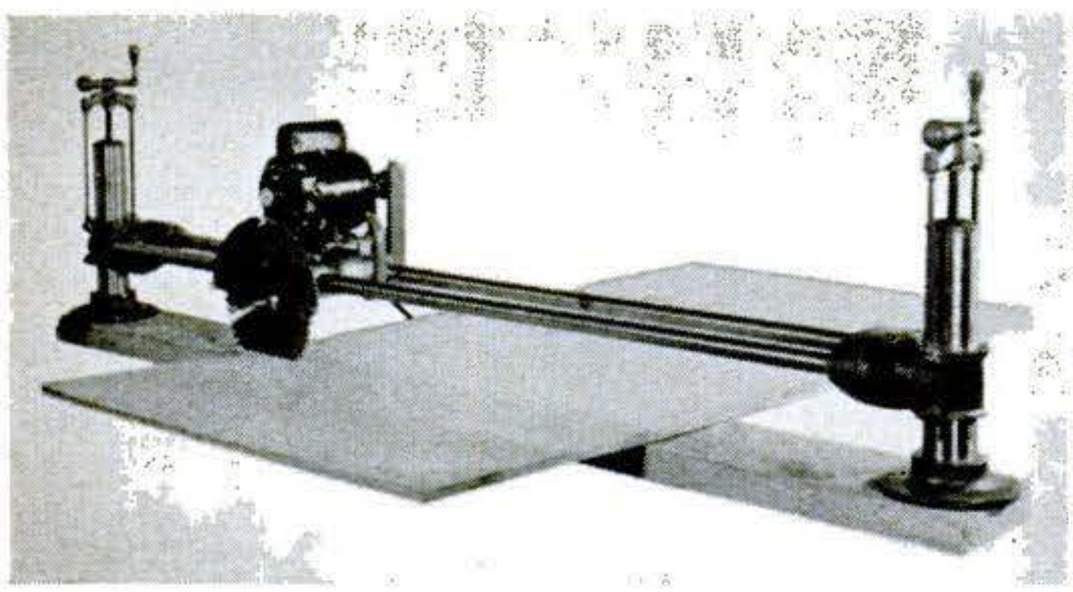


1 Grinder Works Like Jointer. A 5″ cup wheel protrudes slightly through the stationary fence of this grinder, giving a flat surface when work is moved by hand across the wheel. According to the maker, many surface-grinder jobs can be handled by this machine, including flat valves, straight-edged knives, con-rod caps, flat dies and castings. The fence is 3¼″ high, 4½″ wide and 18″ long.

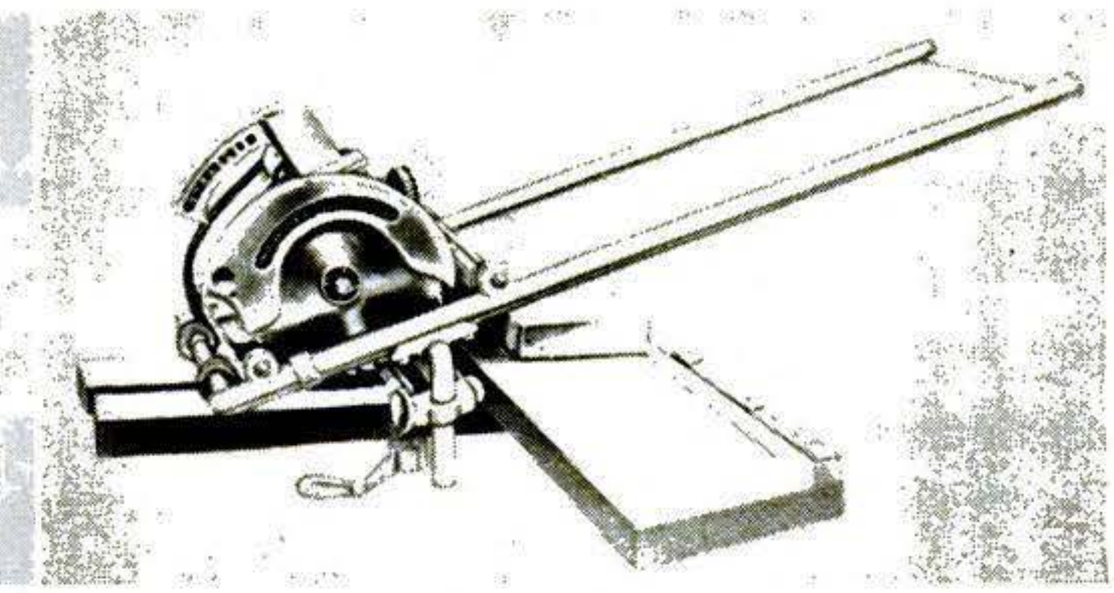
2 Overload Protection. When an engine-driven electric welder is used to thaw frozen water pipes, this protective device will prevent it from overheating or burning out. If the current load is too great, a special lag-type fuse will blow. An ammeter also indicates how much current is passing through the lines. The unit is made in several ratings for welders from 200- to 400-amp. capacity.



3 World's Smallest Grinding Wheel. Only 1/16″ in diameter, miniature mounted wheels or abrasive points like this have been developed to grind extremely small holes in bearings, bushings, instruments, and for similar precision operations.

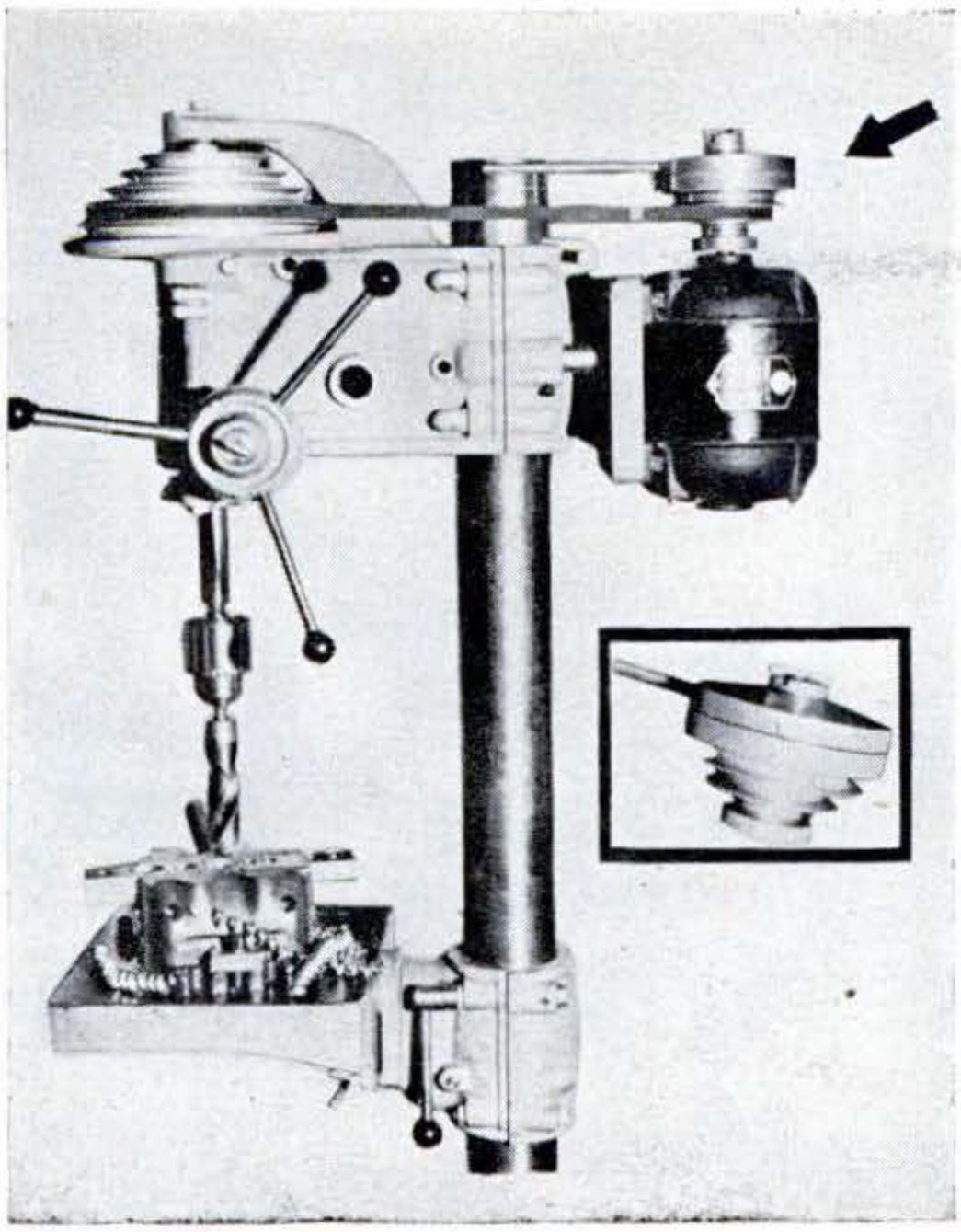


4 Saw Cuts Panel. Cutting 4′ by 8′ panels of plywood or ripping long stock is a snap with the saw above. The saw is drawn through the work on two rails, available up to 10′ long. The rails can be tilted to 90° for mitering or rabbeting, and the depth of cut can be controlled by the screw jacks at each end. An abrasive wheel can be substituted for the saw blade to cut large sheets of metal.



5 Radial Seesaw. The portable saw on this carrier swings down as it is pushed through the work. At the same time, the arms press the work to the plank that serves as a saw table. When the saw is drawn back across the balance point, the arms swing upward so the work can be removed. The saw can be demounted for portable use or shifted crosswise in the carriage for ripping. It has a 24″ cut-off and rip capacity.

Copyrighted material



6 Speed Changer for Drill Press. This gear-reduction unit mounts directly on the motor shaft by means of a setscrew, giving the press a wide range of slower speeds for jobs a standard press couldn't handle. It comes in two models, one with 4½-to-1 reduction ratio and six speeds from 75 to 2,000 r.p.m. The other gives 7-to-1 reduction with six speeds from 45 to 2,000 r.p.m. Speed changing is done by engaging a driving key on top of the unit.

7 Magnetic Screwdriver. The permanently magnetized shank of this screwdriver not only holds one of the four interchangeable bits but also energizes it to pick up and position a screw for driving. Three bits not in use are stored in the metal cap in the Tenite handle. Two of the bits are for slotted screws and two for Phillips.

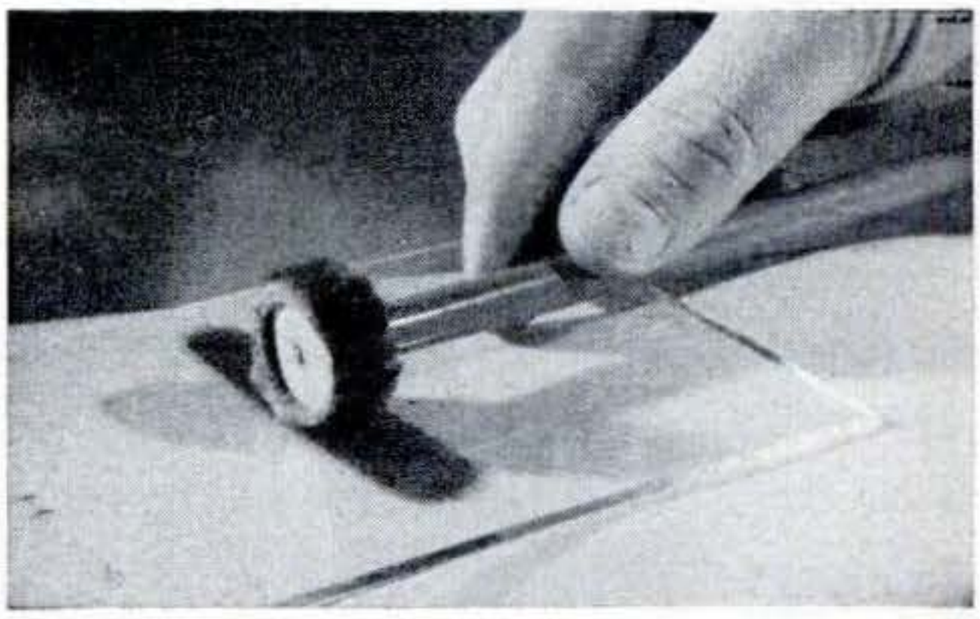
Further information on these products can be obtained from: 1. Southwest Machine Works, 1309 Bridge St., Albuquerque, N.M.; 2. Lincoln Electric Co., Cleveland 17, Ohio; 3. Chicago Wheel and Mfg. Co., Chicago; 4. Hendrick Mfg. Corp., 11 Selman St., Marblehead, Mass.; 5. See-Saw, 4140 Syracuse, Dearborn, Mich.; 6. The Pull-Gear Co., 21125 Dequindre, Hazel Park, Mich.; 7. Magna Tool Corp., 779 Washington St., Buffalo 3, N.Y.

Wood Base Supports Torch

THIS holder makes it almost impossible to tip over a tank torch. A base also is useful on hardening or tempering jobs when the torch is set upright and the work held in the flame.

The base is ½" plywood 6" by 6". The upright portion is ½" stock 6" high and of a suitable dimension inside to just clear the tank. A mending plate drilled and tapped for a small eyebolt secures the tank.

Roller for Painting Trim

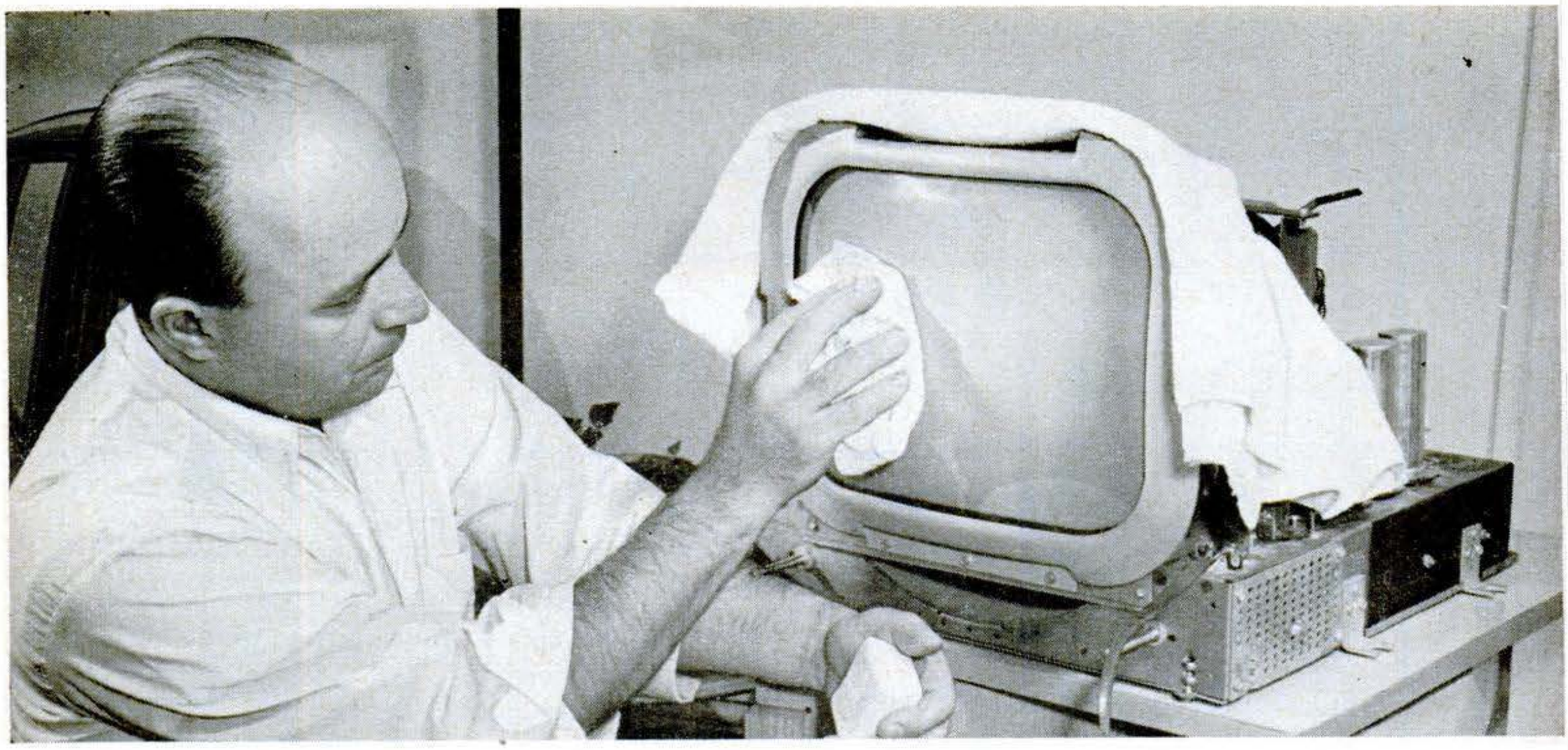


NARROW trim, window putty and similar surfaces can be neatly painted with this roller. Saw a narrow section from a broomstick. Around it glue a strip cut from a lamb's-wool shoe polisher. Drill a hole in center, insert dowel handle.

Vacuum Sucks Varnish Dust

A HOOK scraper proved to be the easiest way to remove old varnish from woodwork in one remodeling job. To keep the dust to a minimum in the house, a vacuum-cleaner hose equipped with a small nozzle was held near the scraper so that it would pick up the particles.

Copyrighted material



How to Wash Your TV Picture Tube

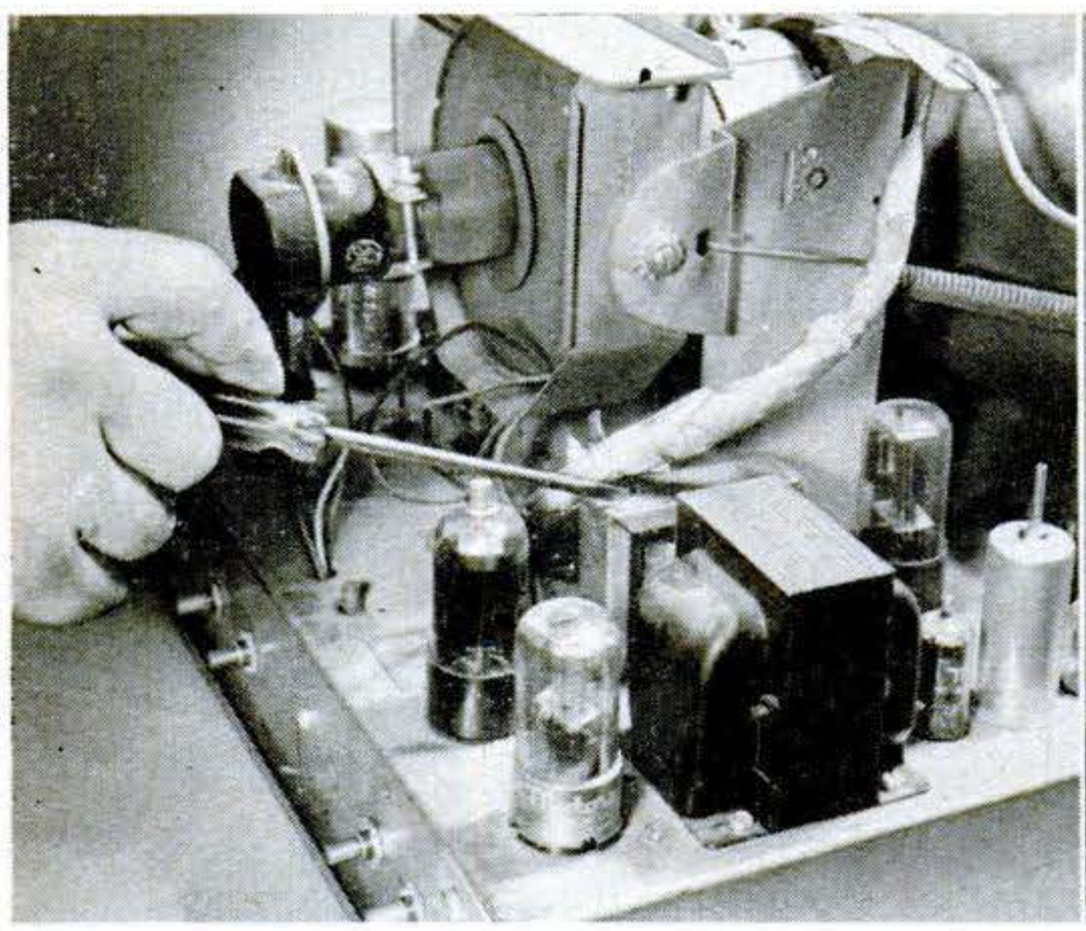
If dust has built up on its face, an old-fashioned scrubbing will brighten up your viewing.

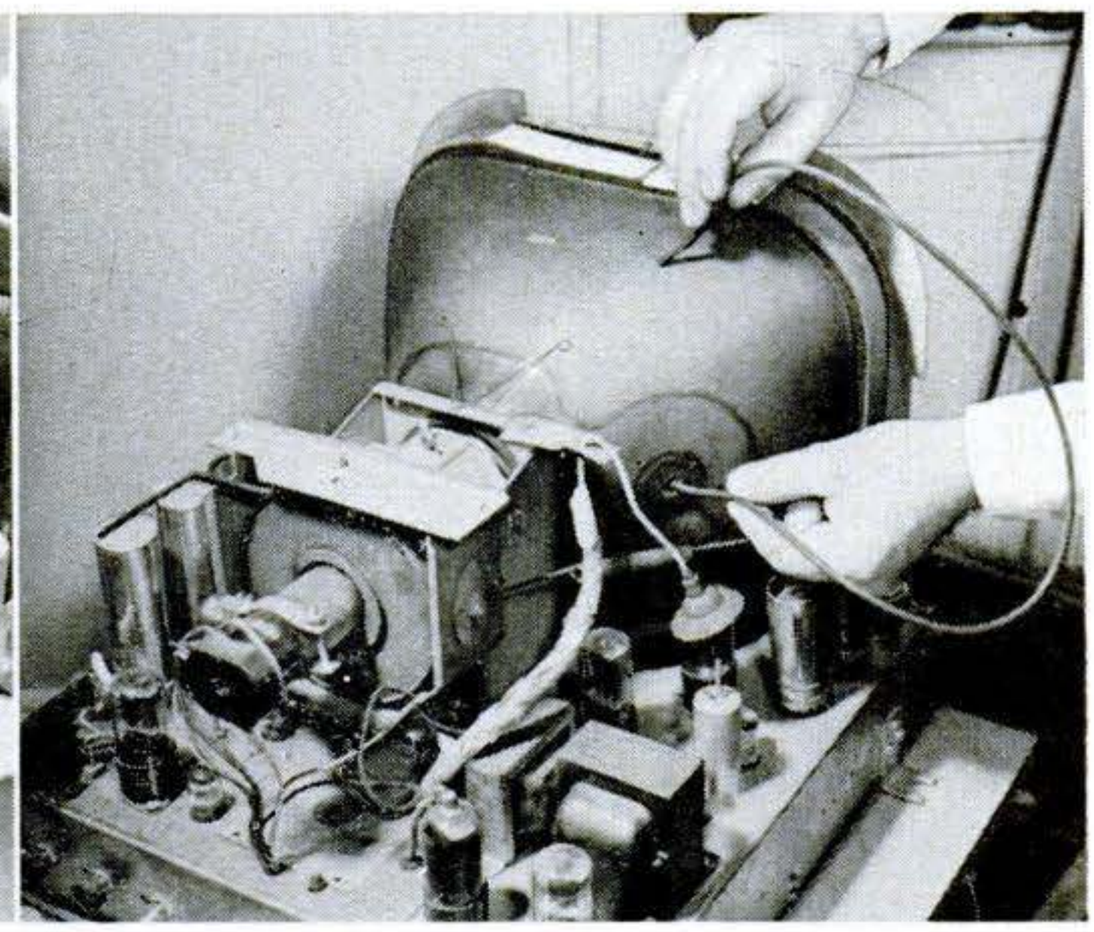
By John B. Ledbetter,
Engineer, WRKC-TV

LIKE a fog that moves in so quietly you don't notice it, a layer of dust is building up on the face of your TV tube, robbing you of clear, bright reception. High voltages and static charges draw dust and soot from the air and hold them tight against the tube.

Washing the tube face is a simple job, but getting at it sometimes presents a problem. On some sets the safety glass can be removed from the front, exposing the tube face. A clip snaps over the screw-on bracket that holds the glass in place.

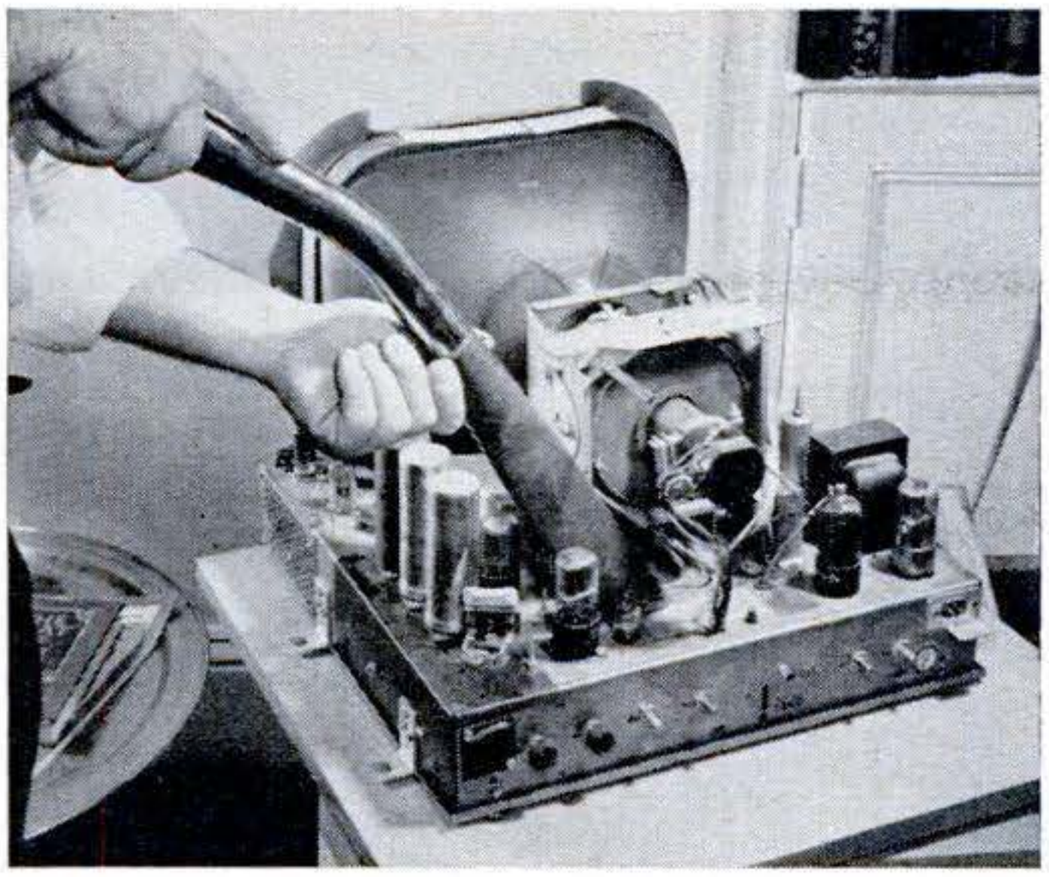
Most sets, unfortunately, are not so easy to clean. The majority are built with the safety glass screwed to the cabinet front



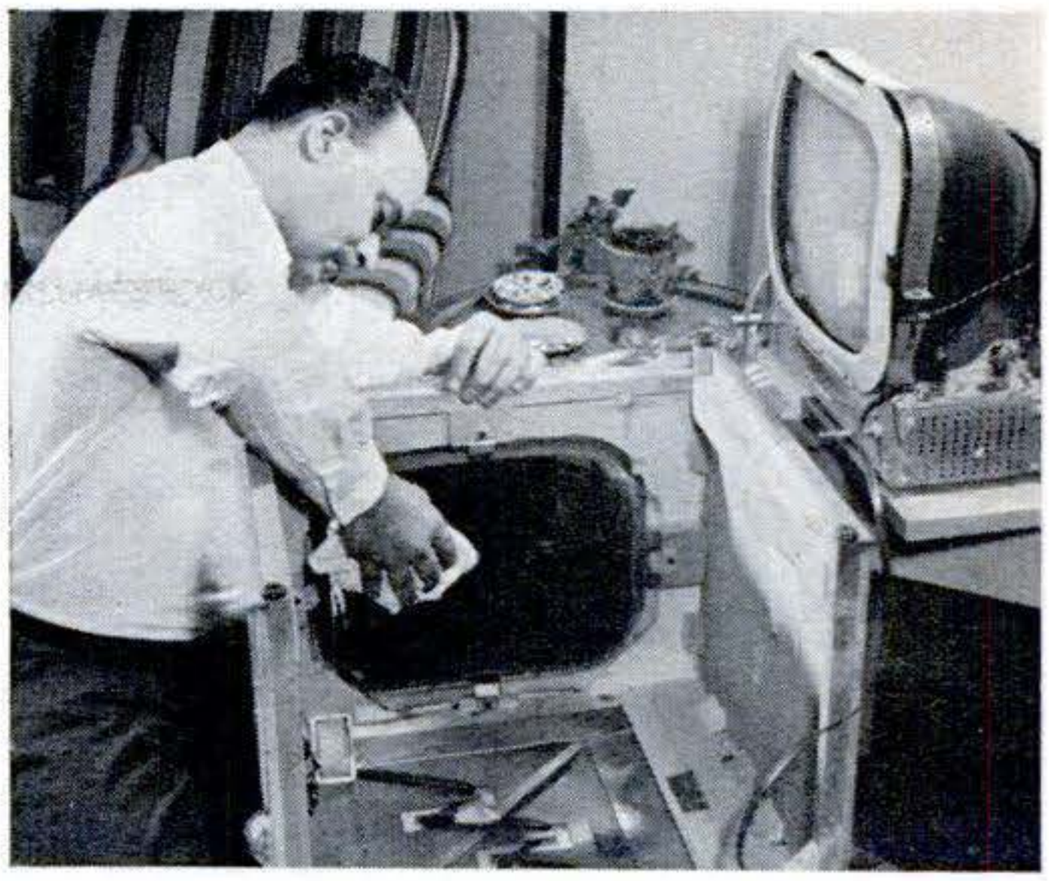


SET MAY STILL BE HOT even though turned off. To avoid unpleasant and sometimes dangerous shock from idle but fully charged condensers, touch a plastic-handled screwdriver firmly against the chassis or other grounded part and bring it down gently on the metal tube caps. This should be done before handling chassis. Picture tube itself may still be charged; remove rubber-covered high-voltage lead from side of tube and discharge surface of tube into terminal with heavily insulated wire (above).

Copyrighted material



DUST ON CHASSIS hampers air circulation and absorbs moisture and grease, hastening breakdown of high-voltage circuits. Blow it out if you can; otherwise suck it out with vacuum cleaner. Clean corners with a brush.



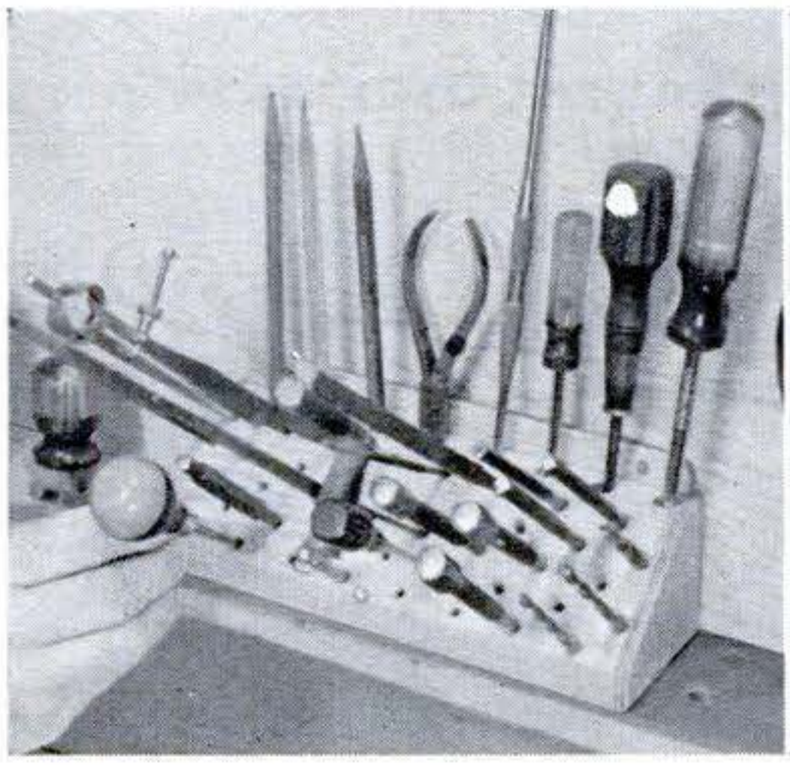
CLEAN SAFETY GLASS with mild soap and a damp, lintfree cloth. If yours is made of plastic, take care not to scratch it. Note brackets holding glass in place; look for them when deciding how to get at tube face.

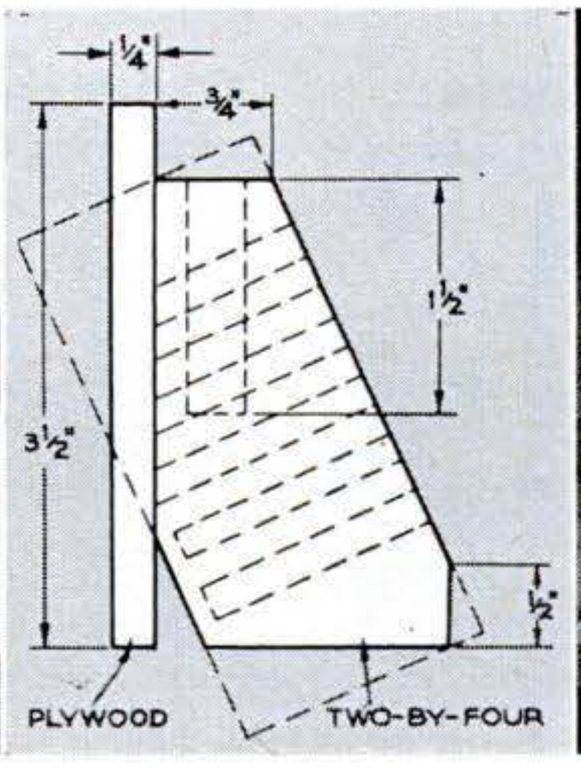
from the inside. The tip-off is four or more little holding brackets that can be seen from the back of the set. To loosen these it is necessary to remove the front knobs and chassis-mounting screws (usually four under the cabinet), disconnect the speaker plug and slide the chassis out. On most sets the tube is secured by a bracket on the chassis.

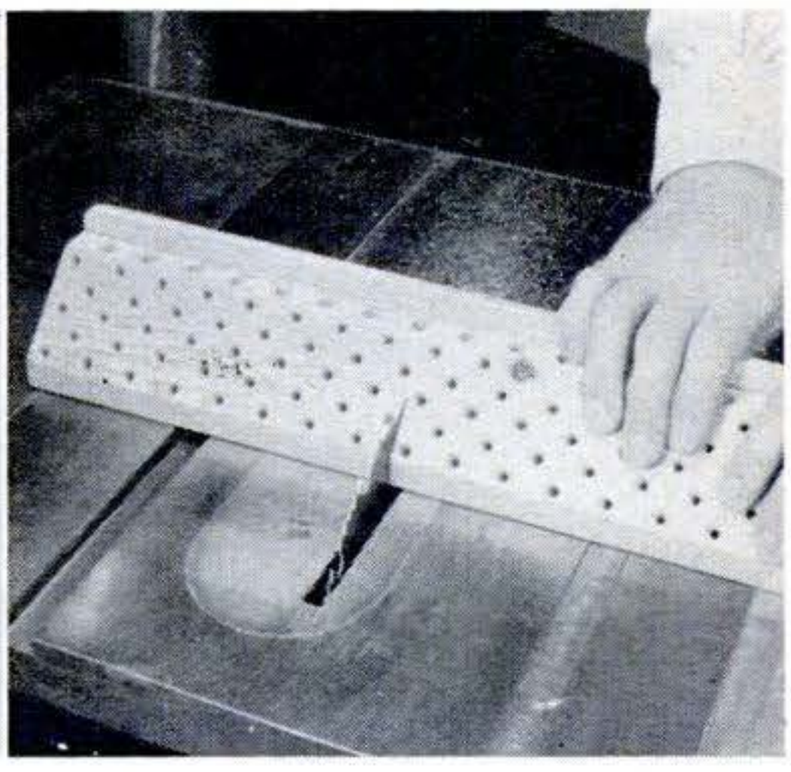
Caution: If you find that yours is one of the few sets with the tube mounted separately in the cabinet, call in a serviceman to clean the tube. This kind of mounting requires that the tube be disconnected and removed before taking out the chassis, not a job for the inexperienced.

DRY TUBE FACE WITH TISSUE after washing it. Drape heavy towel over body of tube to protect you from injury in case of implosion caused by too much pressure or jarring. For maximum protection, also wear goggles.

Tool Rack Is Made by the Yard—Cut Off as Needed







A LENGTH of two-by-four cut to a 45° bevel and fitted with a back panel of ¼″ plywood makes a handy catchall to hold small tools, files, drills and other thin objects.

The beveled face and the strip along the top are drilled full of holes about ¼″ diameter or larger for pliers, screwdrivers and such.

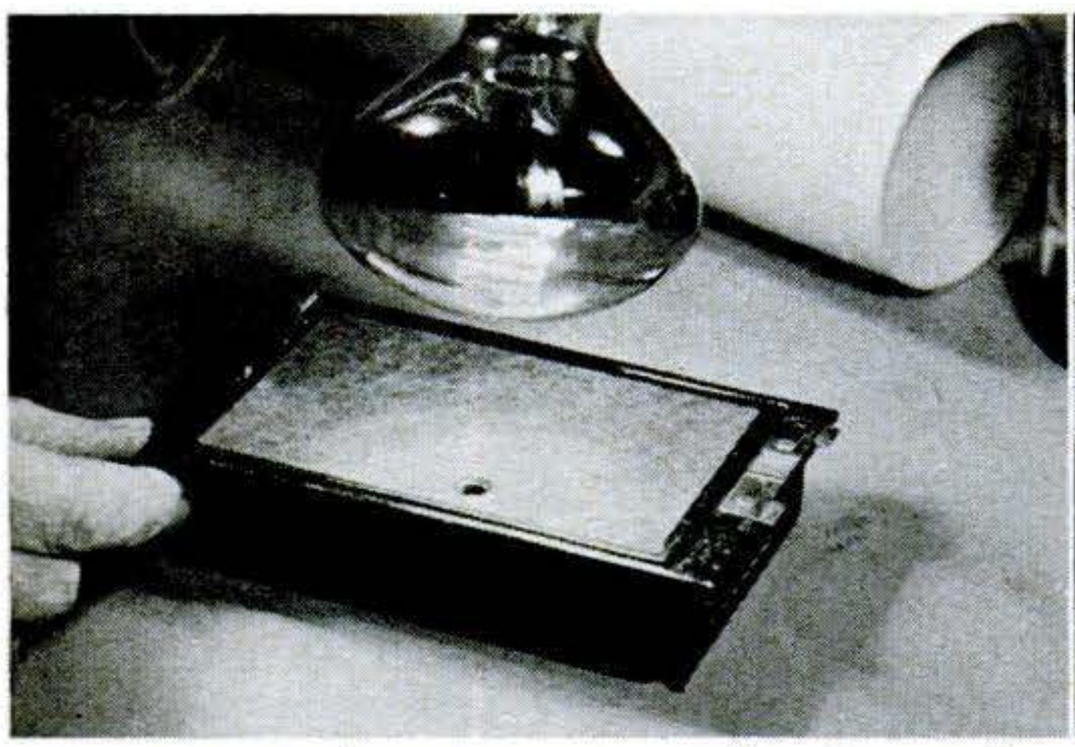
Short lengths can be cut off and spotted around the shop as needed, or the long length can be used across the workbench. If desired the rack can be screwed to the wall. —*Walter Haase, Hartford, Conn.*

Copyrighted material

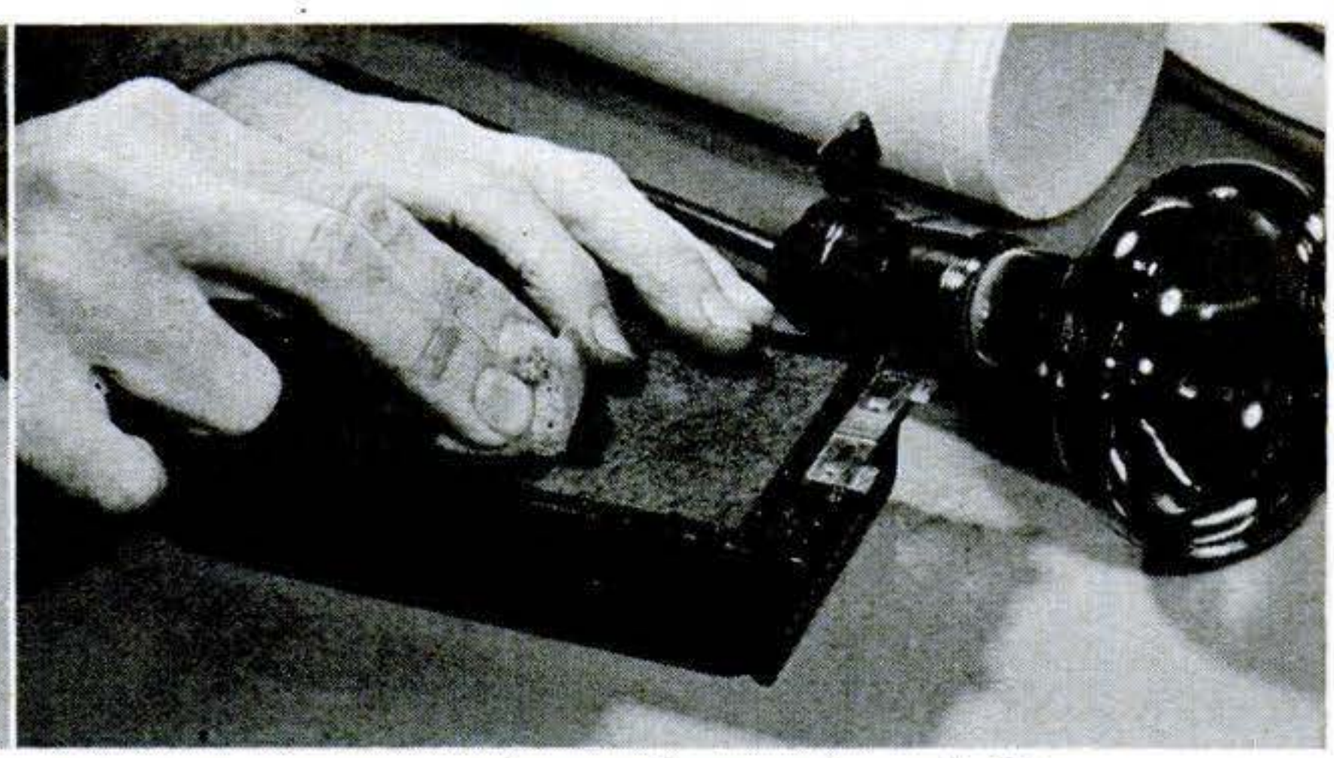
Face-Lifting with

REPRODUCTIONS of wood grain, leather and marble that look like the real thing are possible with plastic veneer. This makes these thin-film refinishing materials especially useful in reclaiming articles that are headed for discard.

The veneer often can be cemented right over an old finish such as the exterior of a camera or the surface of an old piece of luggage. With it you can give books new covers, refinish furniture or spruce up an old portable-typewriter case.

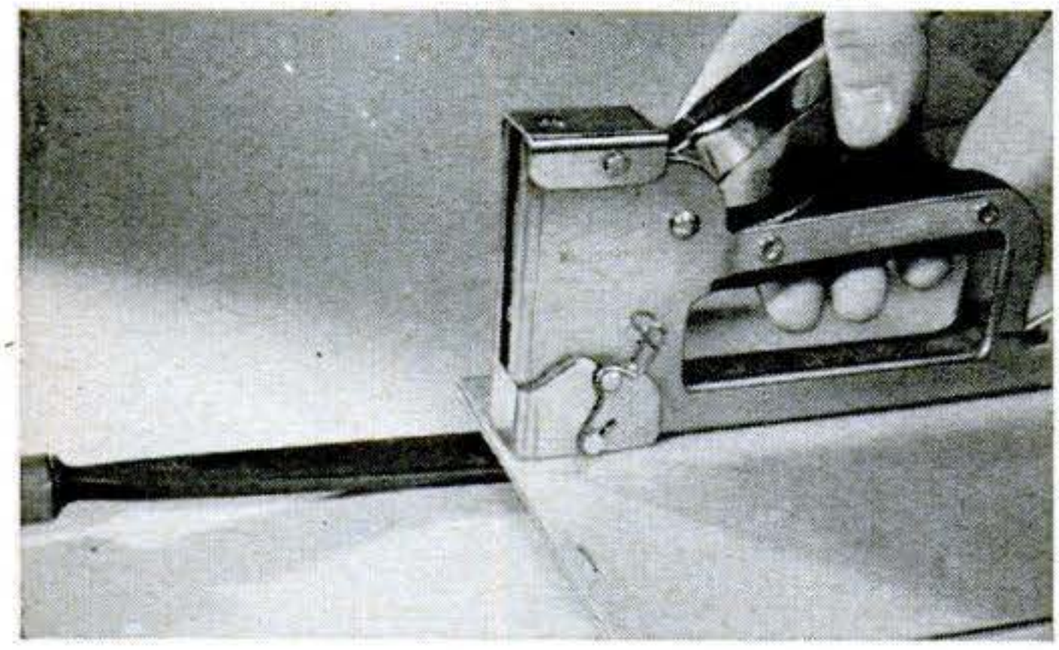


HEAT LAMP softens veneer so that it can be molded over or around irregularities such as the rim of this camera's tripod bushing.



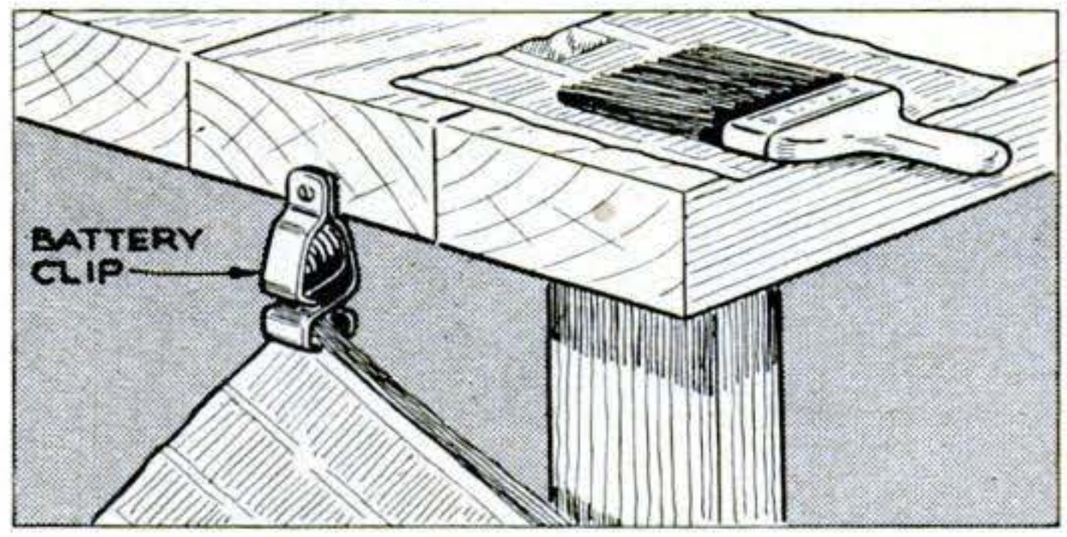
FOAM-RUBBER PAD forces heat-softened film into surface irregularities. Heat-and-pressure method will mold veneer around curves, too.

Tacker Is Heavy-Duty Stapler



A TACKER can be used for fastening cardboard or other materials that are too thick to be handled by a desk stapler. To clinch the heavier staples on the underside of the work, use a shallow concave wood chisel as an anvil.—*K. Murray, Colon, Mich.*

Old Newspapers Used as Wipers



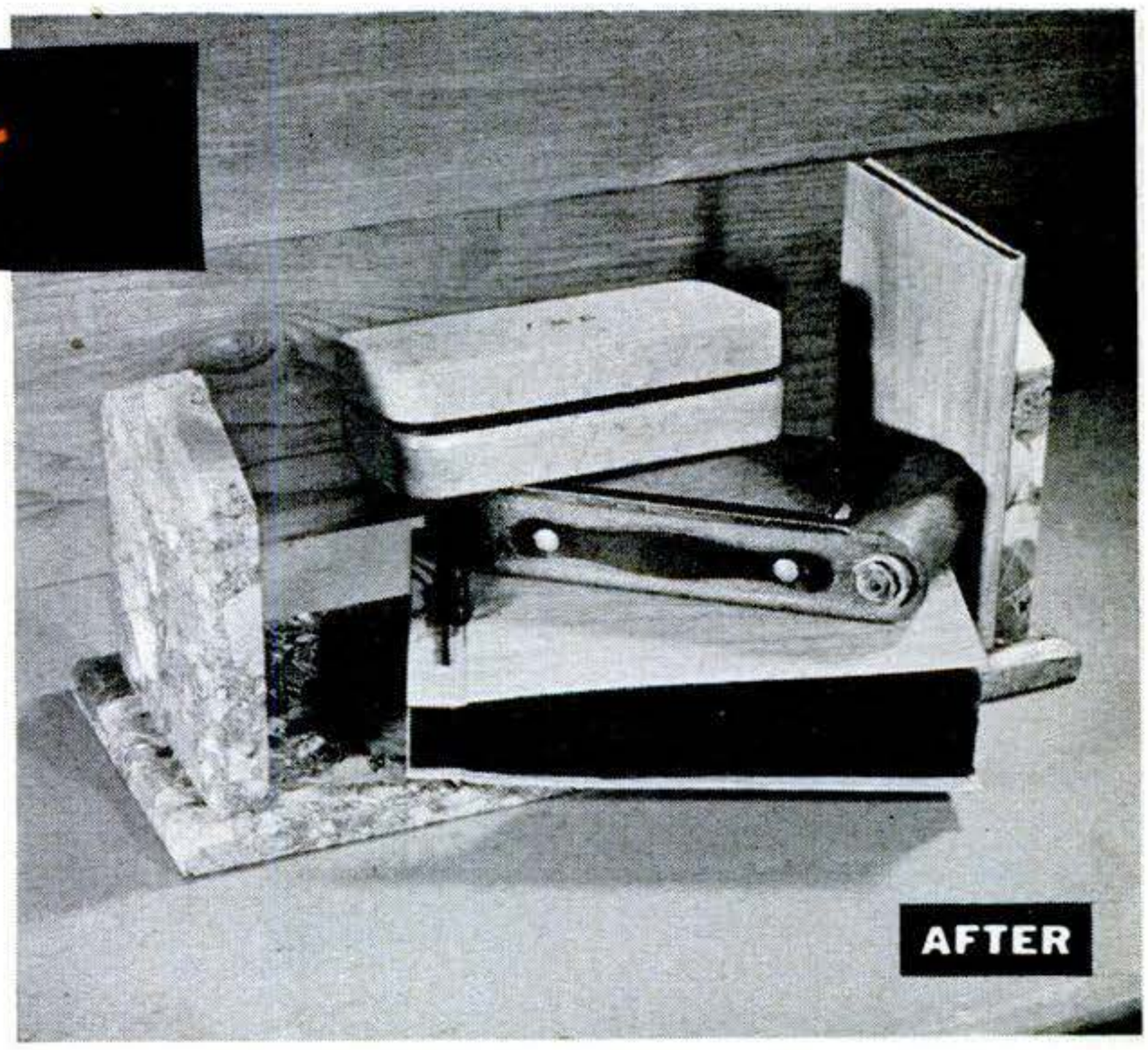
SCREW an alligator clip to the edge of your workbench or to a shop wall. It will hold squares of old newspaper that you can rip out of the clip and use to wipe a brush or clean up paint drips. Newspaper sheets torn into quarters will make a convenient size for this purpose.—*Max Moeller, Millburn, N. J.*

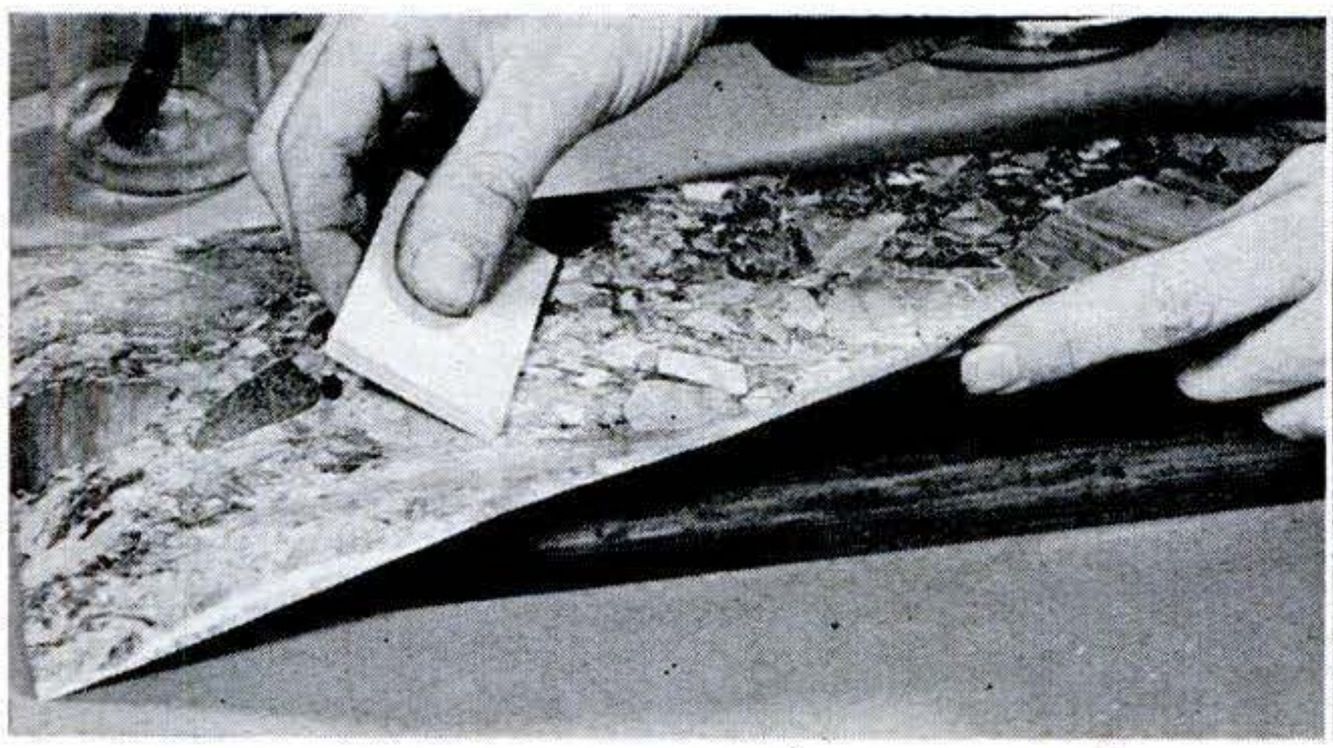
Copyrighted material

Plastic Veneer

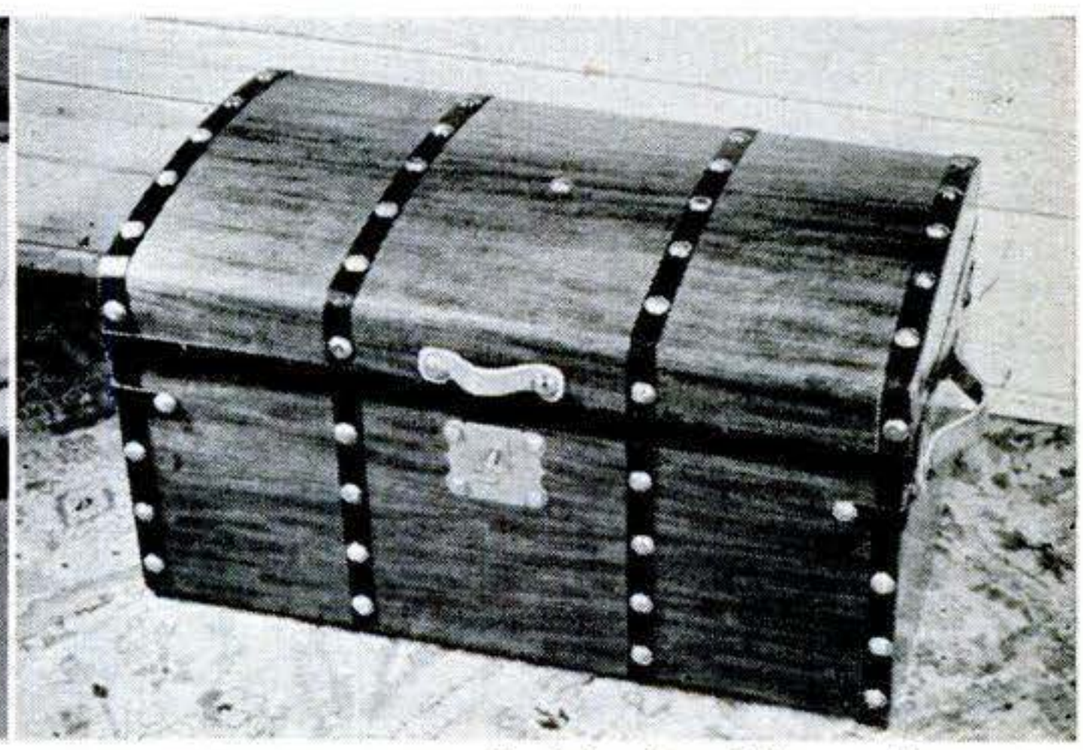
The material pictured here—Transveneer*—comes in sheets of many sizes and patterns. To use the veneer, you first soak it in water so that the protective paper can be removed from the patterned side. Then the film is cemented to the surface to be covered. If the surface is painted, it can be made adhesive with a "welding" solution furnished by the veneer company. Unfinished surfaces must first be given a coat of lacquer.—*W. E. Burton, Akron.*

**Di-Noc Co., 33 Public Square, Cleveland 13.*



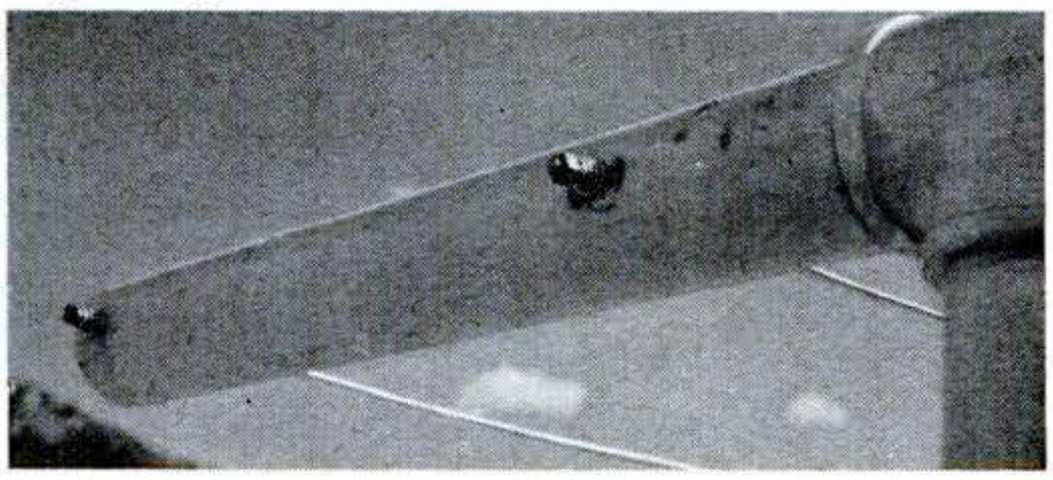


RUBBER SQUEEGEE smooths veneer on flat, even surfaces. The plastic veneer being used here reproduces the pattern and color of marble.



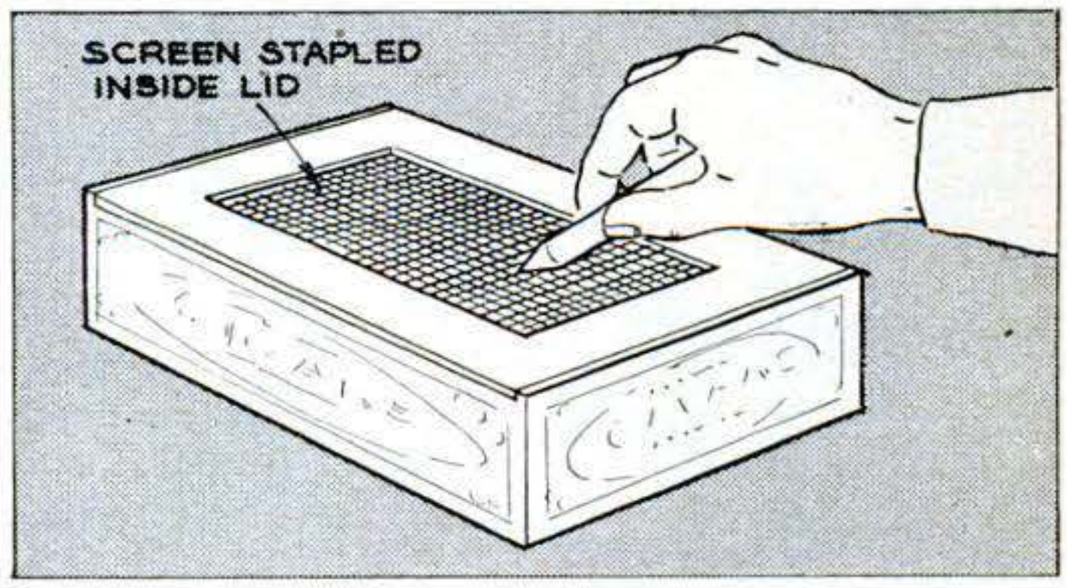
OLD CHEST was refinished with mahogany-grain veneer. The metal fittings and trim were replaced after the veneer had dried.

Springs Hold Clothesline Taut



TIGHTER than a drum is the way Mrs. Ed Marshall of Butte, Mont., describes her clotheslines. The posts are T-shaped 4″ pipe with holes in the arms for eyebolts. Non-rusting wire is attached to the bolts and under the nuts of each bolt is a coil spring. The springs permit slight sagging but pick up the slack as soon as clothes are removed. —*E. V. Reyner, Townsend, Mont.*

Window Screen Sharpens Chalk



THIS simple sharpener puts a keen point on chalk and also catches the chalk dust. It's a cigar box with a rectangle cut out of the lid and a piece of window screening stapled inside the lid. The chalk is rubbed across the screen.—*James F. Bahr, Fresno, Calif.*

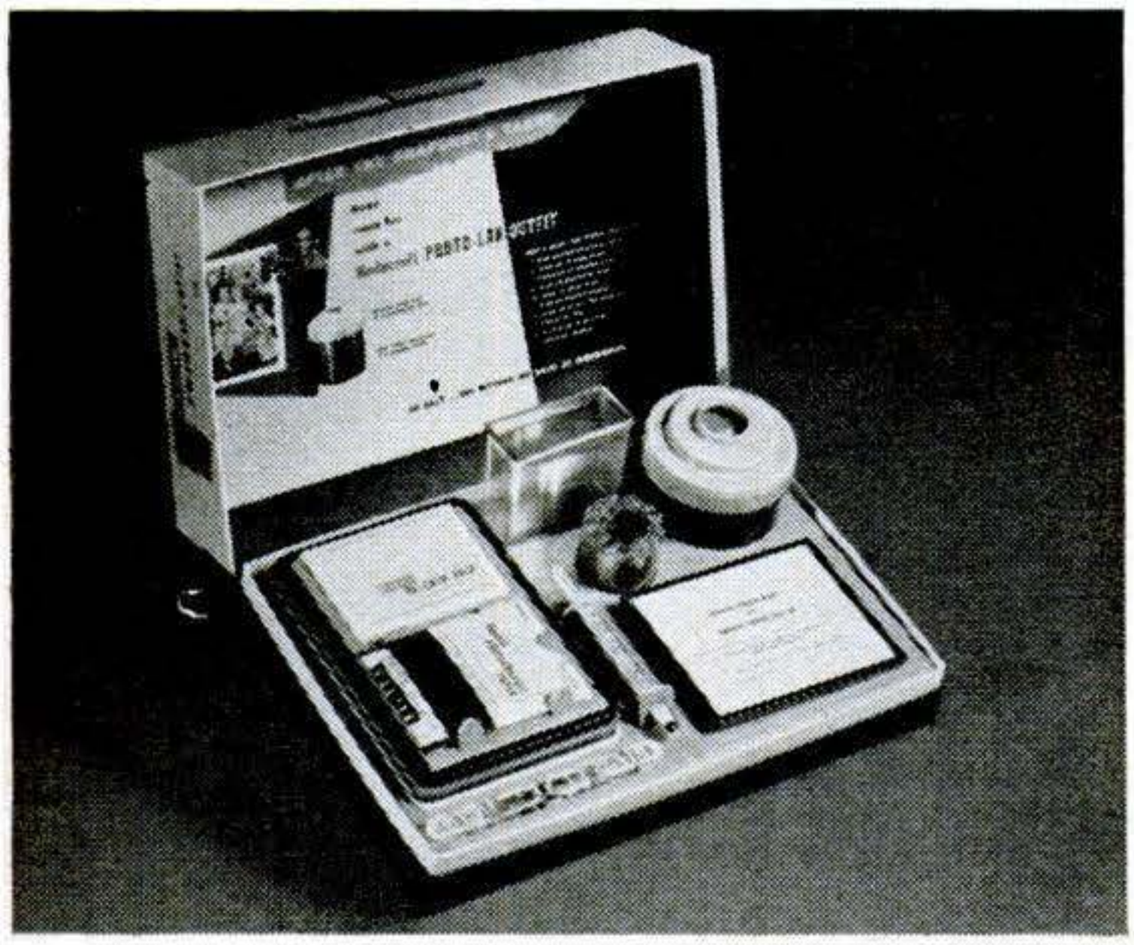
Copyrighted material

Now you can set up a "darkroom" *right in your kitchen*

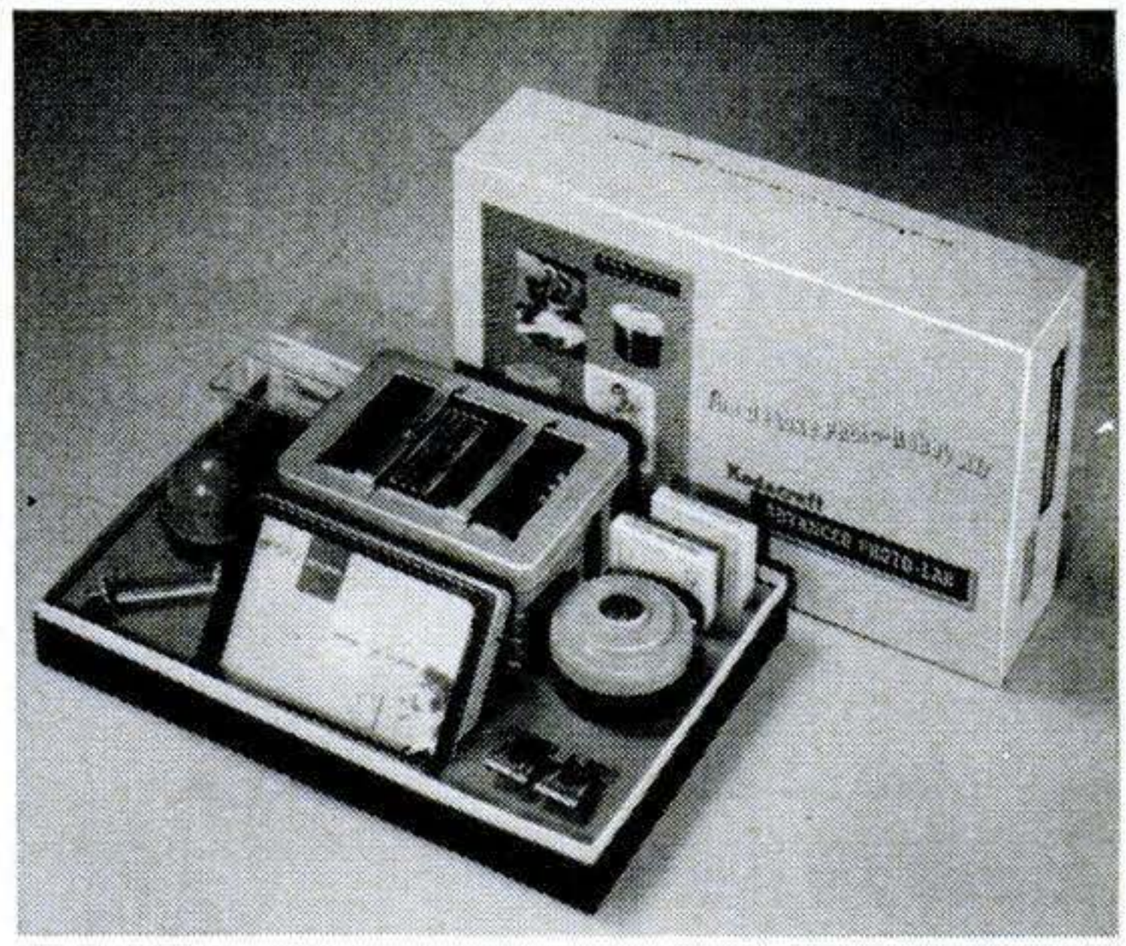
Costs as little as 5 dollars
Takes 5 minutes Worth a million in thrills

So you always thought a darkroom was dark and mysterious, hard to set up and expensive. Well, here's good news. The old-fashioned darkroom has now emerged into the light of day! All you need is (1) a sink and (2) one of the Kodacraft outfits you see here. And when you want to branch out, all you need do is add inexpensive accessories such as you see on the opposite page. Ask your Kodak dealer to demonstrate this equipment.

Kodacraft Printing Kit (*displayed above*) **costs only $4.95.** You can have a world of fun watching your own pictures appear for the first time in a printing tray. And think of the pleasure you can have in making duplicate prints for friends, making greeting cards for special occasions. Use of the Kodak Velite Paper included in the kit permits printing under the lighting conditions of most kitchens or bathrooms. This kit contains the essentials you need for printing pictures—three 5 x 7-inch rocker-type trays, Kodacraft Printing Frame with set of three masks for nine negative sizes, 25 sheets 2½ x 3½ Kodak Velite Paper, graduate, Kodak Tri-Chem Pack, Kodak Darkroom Thermometer, Kodak Glass Stirring Rod, and complete book of instructions.



Kodacraft Photo-Lab Outfit—$8.75. Includes basic essentials for developing and printing pictures—three 5 x 7-inch rocker trays; Kodacraft Printing Frame with set of three masks for nine popular negative sizes; quick-loading Kodacraft Roll-Film Tank with 620-120, 616-116, and 127 roll-film aprons for easier developing; 25 sheets 2½ x 3½ Kodak Velite Paper; 8-ounce graduate; 2 Kodak Tri-Chem Packs; Kodak Darkroom Thermometer; 2 film clips; and instruction booklet.



Kodacraft Advanced Photo-Lab—$14.10. Offers complete developing and printing equipment, featuring the easy-to-use Kodacraft Metal Printer for negatives to 4 x 5½ inches. Other items: three 5 x 7-inch rocker trays; Kodacraft Roll-Film Tank with 620-120, 616-116, and 127 roll-film aprons; Brownie Darkroom Lamp, Model B; 25 sheets 2½ x 3½ Kodak Velite Paper; 8-ounce graduate; 2 Kodak Tri-Chem Packs; Kodak Darkroom Thermometer; Kodak Glass Stirring Rod; 2 Kodak Junior Film Clips.

Copyrighted material

Kodacraft Roll-Film Tank—$2.53. The easiest tank on the market to load. Includes aprons for 620-120, 616-116, and 127 film.

Kodacraft Miniature Roll-Film Tank—$2.53. Permits simultaneous development of two rolls of 35mm. film or Bantam-size film (828).

Kodak Blotter Roll—$2.88. Corrugated backing allows air to circulate and dry prints more rapidly. Keeps prints from curling up.

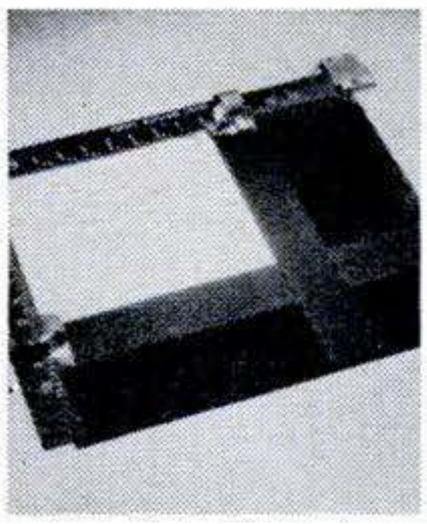
Spring-wound Kodak Timer—$7.20. Covers all intervals up to 60 minutes. Both minute and split-second hands. Tilting base.

Kodak Electric Time Control—$13.50. Automatically times printing. Printer or enlarger plugs into control. Repeat timing possible.

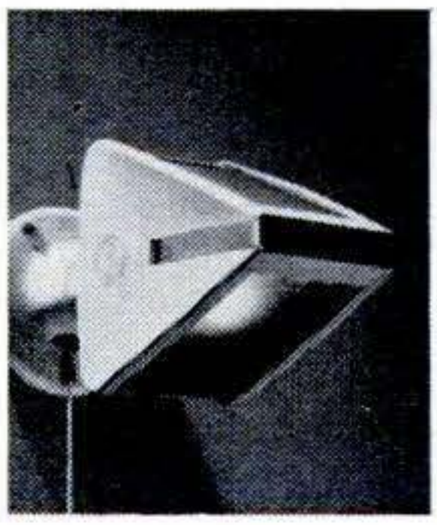
And when you want to expand operations, you have a wide choice of inexpensive Kodak accessories

Kodak Utility Footswitch—$10.00. Keeps your hands free. Controls enlarger, printer, or safelight lamp. Dull light marks location.

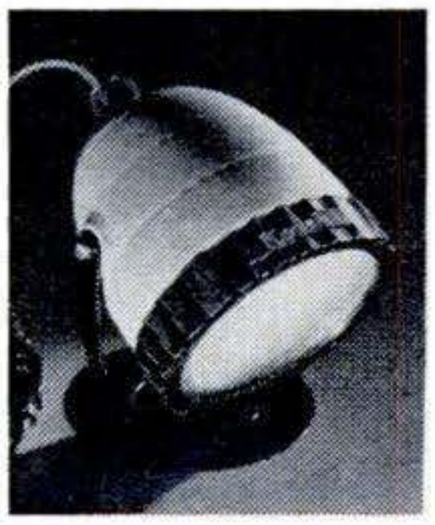
Kodak Automatic Tray Siphon—$4.50. Converts sink or tray into automatic washer. Attaches to water tap. Washes prints, films.



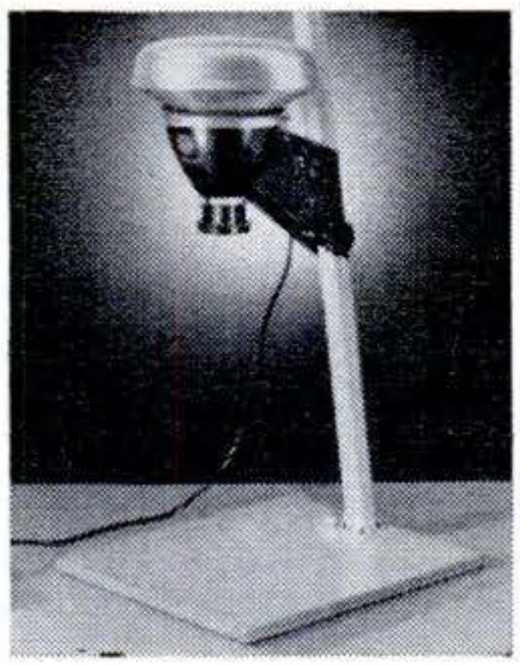
Kodak Masking Easel 11 x 14—$9.60. Facilitates cropping, holds paper flat. Heavy, non-wobble felt base insures steadiness.



Kodak 2-Way Safelamp—$4.50. Its unique construction permits direct or indirect lighting—or both. Safelight filter and bulb supplied.

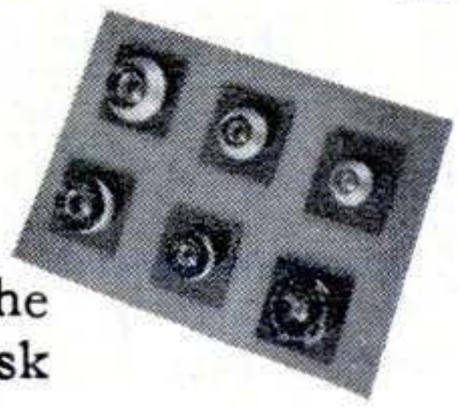


Kodak Adjustable Safelight Lamp—$7.40. Has double-swiveled shank and bracket. Attaches to wall, bench. Includes safelight filter.



Kodak Hobbyist Enlarger (*left*) **—$44.00** (incl. lens). Most brilliant enlarger in this price field. The secret is a highly reflective coating inside enlarging head. Cold-light illumination protects negatives. Rotating negative holder loads easily.

Kodak Flurolite Enlarger (*right*)**—$99.50** (without lens). Has all the advantages of the "Hobbyist" plus many more uses. With accessories, the 2¼″ x 3¼″ "Flurolite" quickly converts for copying, slide making, other uses. Cold-light protection for negatives.



Kodak Enlarging Lenses (*right*) for the "Flurolite" range from the Kodak Enlarging Ektanon Lens, 50mm. *f*/4.5—$14.00 . . . to Kodak Enlarging Ektar Lens, 4-inch *f*/4.5—$49.90.

Your Kodak dealer will be glad to start you off the right way in developing and printing pictures. Ask him all about it the next time you see him.

Prices subject to change without notice

Eastman Kodak Company, Rochester 4, N. Y.

Kodak
TRADE-MARK

[Continued from page 117]

duction. It was invented by Bill Barnes of Muncie, "father of the overdrive." It is manufactured by the Warner Gear Co. of that city, acts upon steering gears made by the Ross Gear & Tool Co. of Lafayette, and helps guide a car built in South Bend.

At first, it will be available for the Commander series only, though the Champions are expected to get it later in the year.

Design Goes Continental

The decidedly new look of Studebaker's 1953 bodies—especially the Champion and Commander hard-top convertibles—is the result of a stylist's dream come true. Several years ago, Raymond Loewy, head of the firm responsible for styling Studebakers, asked Studebaker president Harold Vance to permit the boys at the drawing boards to try their pencils at a stimulating, unconventional exercise.

Why not, he asked, let them see what kind of a car they can design if they have no limitations except those that a designer of foreign cars might face? Foreign cars are generally lower in relation to length than U. S. cars are. This project was not to be allowed to interfere with the stylists' regular work, so Vance told Loewy to let the boys loose.

They promptly set out to design a car with exceptional visibility, lower windowsills and a sportier look. One specific goal they had was to bring the windshield posts and the windshield itself back closer to the driver.

Nose Like Airplane

After the usual preliminaries on paper, stretched out because this was being done "on the side," and after six months of leisure-time study of quarter-scale models, the Studebaker styling section produced a full-scale model. It was a low, racy job with a nose slightly resembling that of a Constellation airliner.

The mock-up might possibly have gathered dust, however, if it hadn't happened to be completed just prior to an annual meeting of the board of directors. At the close of the meeting, partly by way of entertainment, Vance ushered his directors in to see the unconventional mock-up. It made an instant hit.

"When," remarked one of the eminent visitors, "do we start building it?"

The designers were flabbergasted when the production heads eventually decided to make their dream a reality. That sort of thing happens in the automobile industry about as often as Halley's Comet appears.

Model Becomes the Real Thing

The car that actually is the original mock-up translated into a production model is the hard-top convertible, a truly handsome vehicle as the accompanying photos show. Practically the only change made in the process was that of raising the over-all height half an inch. Even at that, the car stands only 56 5/16 inches high. The body design is to be identical for both the Champion and Commander hard tops and moderated somewhat for the sedans.

One entirely unexpected result of the advanced design is the elimination of wind noise from opened vent flaps. That had been plaguing Studebaker owners—as well as its designers—for years. Just about the time that the engineers had finally produced a vent that wouldn't howl, they discovered that the new body contours had changed the air flow in such a way that the vents no longer caught the wind and didn't screech anyway. Now you can talk comfortably in a Studebaker and enjoy fresh air at the same time, even at 75 miles an hour. END

It's the Other Guy

There's nothing so gratifying,
When a cop's siren stops you dead,
As to have him go by you eyeing
Some car that's up ahead.

—*Fireman's Fund Record.*

Copyrighted material

RACING'S MOST COVETED AWARD AGAIN WON WITH CHAMPION SPARK PLUGS!

Chuck Stevenson, 1952 AAA National Racing Champion and winner of the stock car division of the Mexican Road Race.

The AAA medal awarded for the best record in 15 big car races totalling 2400 miles.

"When you're up against the best drivers and cars in the nation you want spark plugs that stay with you," says Stevenson. "For my money there isn't a spark plug in the world to compare to Champions and I give them full credit for helping make 1952 my big year. Practically every top race driver I know, here or abroad, will tell you Champions are the best!"

The spark plug chosen by Chuck Stevenson—and by nine of the first ten AAA drivers—must be the best—and that means Champion! This preference by those whose lives and livelihood depend on engine performance means that when *you* pick Champion Spark Plugs you are buying finer performance, economy and dependability. Whatever make or model car you drive—*it will run better with Champions!*

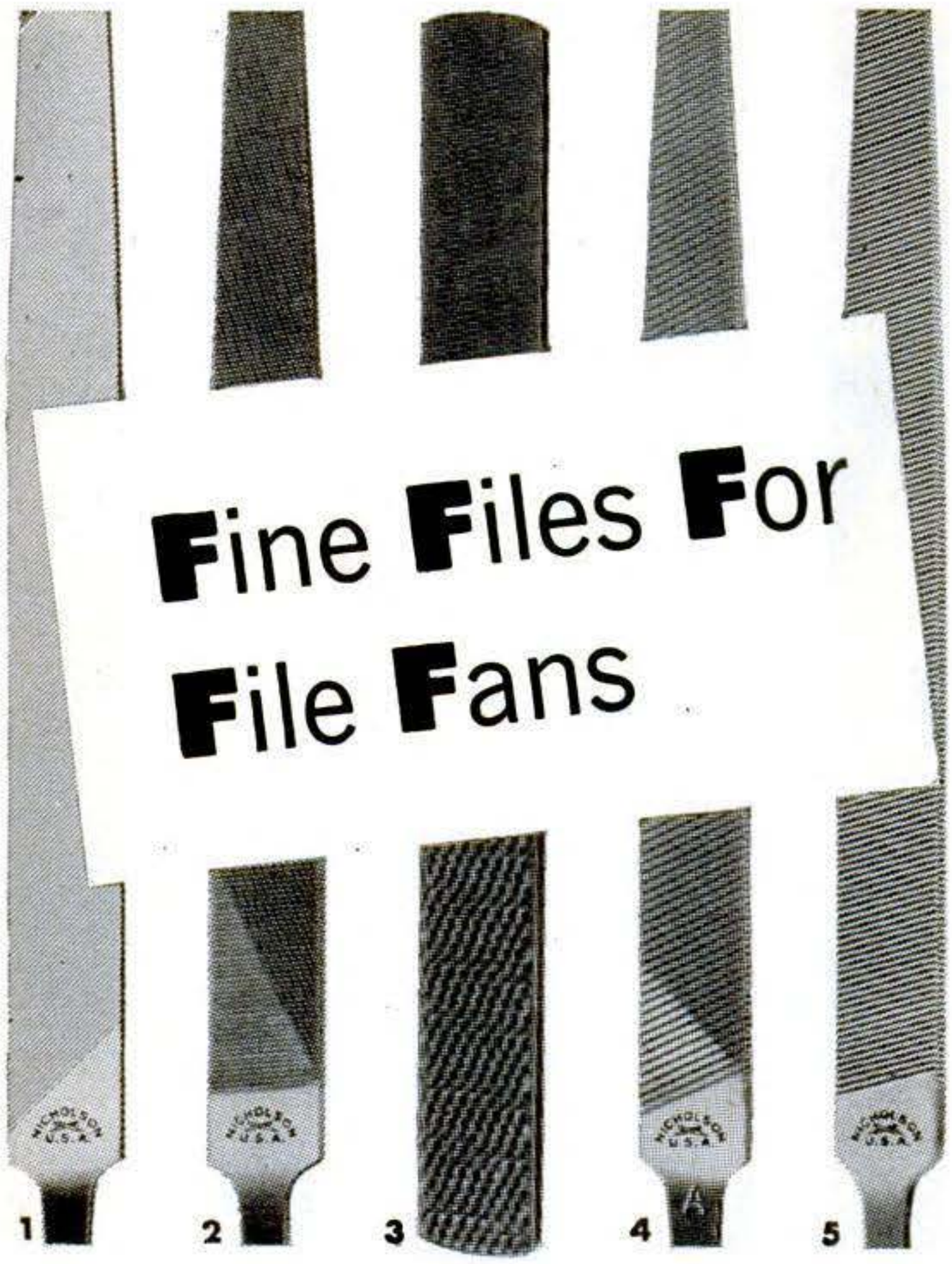
CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

CHAMPION

SPARK PLUGS

Better by Far for **EVERY CAR** *Regardless of Make or Year*

Copyrighted material



Amateur and professional craftsmen get a special kick out of the unusual in the tools they add to their equipment. Here are some special files that will warm any tool user's pride. The Nicholson or Black Diamond trademark assures their practicality and quality. If your hardware dealer doesn't have them on hand, he can get them for you through his wholesaler.

1. **LATHE FILE** with teeth cut at a long angle to "slide" out the chips and prevent them from scratching work being smoothed in lathe.
2. **BRASS FILE** with special "non-clog" teeth cut for use on brass and other tough ductile metals.
3. **4-IN-HAND** file-rasp with two kinds of cutting surfaces on both half round and flat sides.
4. **ALUMINUM TYPE "A" FILE** for soft aluminum and aluminum alloy castings. Small teeth "scallops" break up filings, help clear out chips.
5. **LEAD FLOAT** with stubby "blade"-like teeth for "floating" or "shaving" away extra-soft metals, such as lead, babbitt, pure copper.

For free pamphlet, ***"Ten Special File Types,"*** and free book, ***"File Filosophy,"*** on kinds, use and care of files, write to –

NICHOLSON U.S.A.

NICHOLSON FILE COMPANY
19 Acorn Street, Providence 1, R. I.
(In Canada, Port Hope, Ont.)

BLACK DIAMOND TRADE MARK

NICHOLSON FILES ***FOR EVERY PURPOSE***

Small Trains Are Big Business

[*Continued from page 156*]

enthusiasts, and Ulrich resigned from his North American job. Opening a plant of his own, he sold a total of 10,000 signals as fast as he could turn them out.

Ulrich is constantly adding other items. His track cleaner, patterned after a Santa Fe water and tool car, spreads a light oil-cleaning fluid through a spring-loaded felt shoe onto the rails. And 14,000 hobbyists fell like a ton of coal for the little Ulrich drop-bottom gondola car. Introduced in July, 1952, it has eight doors in the bottom. They actually open and close at the touch of a finger!

On the other side of the picture, there is nothing accidental about Albert R. Kurtz and Albert R. Kurtz Jr. pooling their resources in the model-railroad business. What is unusual about this father-son team is that both are ordained ministers in the Lutheran Church.

From Garage to Factory

Albert Kurtz Jr. has been keen about model trains since he was seven, and he is now 28. He organized Kurtz Kraft Models Co. four years ago in the family garage in Burlingame, Calif. He had a single, hard-headed reason—to piece out his slender income while studying and during his early ministerial years. His first product was a semaphore signal. That was followed by a crossing gate, a searchlight, a lamppost, a switch machine and a switch control. Now located in Long Beach, Calif., the company grossed the sum of about $30,000 in the year 1952.

There's your model-railway market. But if you have an idea for an oscillating Diesel headlight, or a toy commuter who always misses his train, you'd better think twice before you put it into production. You, too, could lose a good hobby. END

Still Learning

"How long did it take your wife to learn to drive a car?"

"It will be 10 years this fall."—*L & N Magazine.*

Copyrighted material

Here's a job you can do

REFINISH YOUR BATHROOM with Armstrong's M-67 Monowall

You can remodel your own bathroom, and save money doing it, when you install Armstrong's M-67 Monowall.

Monowall is a tempered hardboard panel finished with a tough plastic called M-67*. This durable surface offers amazing resistance to hard knocks, stains, dirt, and harsh solvents. Its nine decorator colors come in three smart patterns . . . tile, plain, and streamline. Armstrong's M-67 Monowall is available 4′ wide and in lengths up to 12′.

If the old walls are in good condition, you simply cement Monowall right over them. The whole job can be done with ordinary hand tools. You can cover the entire room, or only the lower walls. The joints and edges are trimmed with neat metal channels. Your lumber dealer will give you more information on this practical wall covering. For the free booklet, "How to Install Armstrong's M-67 Monowall," write the Armstrong Cork Company, 9202 Lincoln Street, Lancaster, Pennsylvania.

* T.M. applied for

Cut Monowall to size . . . trowel on cement . . . and press into place

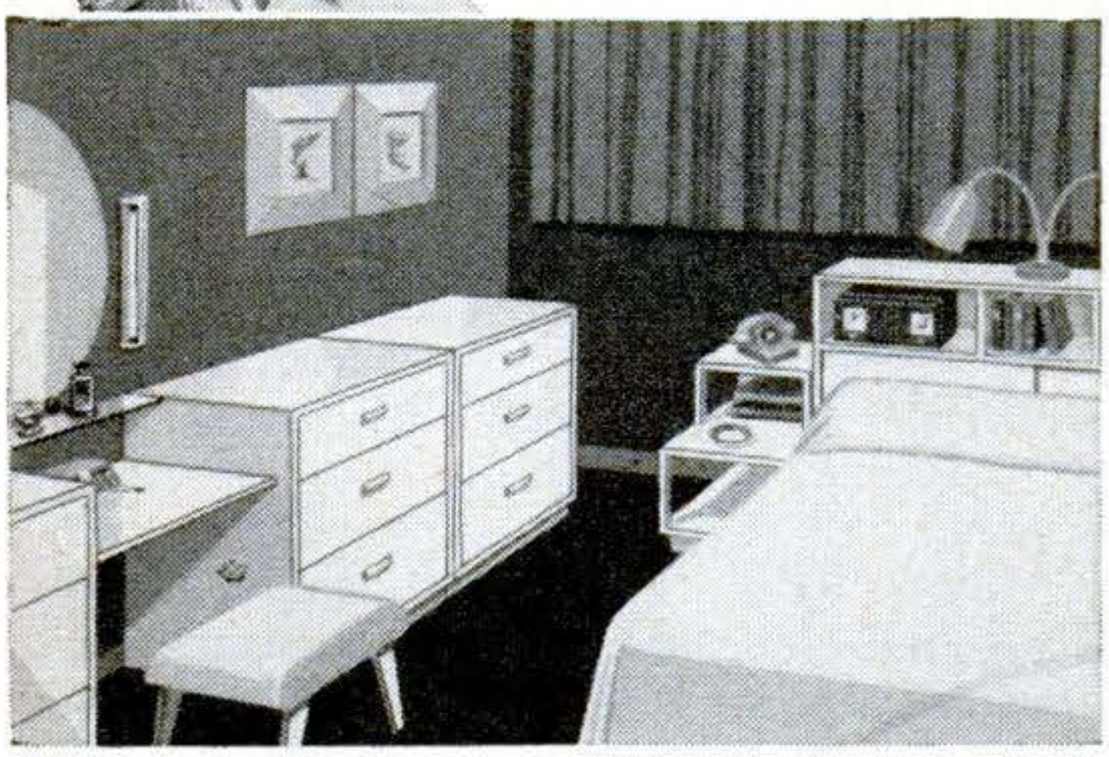
ARMSTRONG'S BUILDING MATERIALS

Temlok® • M-67 Monowall® • Cushiontone® • Insulating Wool • Hardboards

Copyrighted material

"I built our modern bedroom for only $76.50*

saved $301 with my SKIL Home Shop Saw and Sander"



Want a real feeling of accomplishment? Get yourself a SKIL Home Shop Saw and watch your wife's eyes light up when you make your own beautiful furniture.

Take this modern bedroom—detailed in SKIL-Chart No. 109. You can build it in no time with the simple-to-follow instructions and a SKIL Saw to cut sawing time and work 90%! You see, it's *easy* to bevel, miter and rip even 2-inch lumber with your SKIL Home Shop Saw. All adjustments are simple and quick.

Even the lowest priced SKIL Saw is by far the most powerful saw at *anywhere* near its price. You save money building things for yourself. So much so that your SKIL Saw quickly pays for itself. Add this to the fun and pride of creating things, and you see *why* you should get started now. Send coupon with 10¢ for SKIL-Chart No. 109—today!

SKIL Deluxe Home Shop Saw—Model 586—$59.50. 6" saw. SKIL Saw table (right) and accessories easily convert this saw to tilting arbor bench saw, sander and shaper.

SKIL Home Shop Belt Sander $68.00

SKIL home shop Tools

Prices subject to change without notice. *Bedsprings and mattress extra. Price includes materials only, and varies locally.

Made only by SKIL Corporation, 5033 Elston Ave., Chicago 30, Ill.
In Canada: Skiltools, Ltd., 3601 Dundas Street West, Toronto 9, Ont.

SKIL Corporation, Dept. D-23
5033 Elston Ave., Chicago 30, Ill.

I enclose 10¢. Please send SKIL-Chart No. 109 showing how to build the above modern bedroom furniture.

Name_____

Street_____

City_____ State_____

Buick V-8 Has Dynaflow Plus Gears

[Continued from page 162]

flat, horizontal surface, reducing the chance of oil leaks.

It does something else—it narrows the engine down by several inches. You can see one result of that when you step on the brake. The narrower engine left the builders enough room up front to position the brake pedal for both right- and left-footers.

You'll remember that I remarked last month on the squabble going on among Detroit manufacturers on the design of combustion chambers. Buick goes in for the short, swirl-type chamber.

New Pistons Reduce Wear

Finally, Buick's new engines have full-skirt pistons instead of the "slipper" type. That's hard to quarrel with. Full-skirt pistons reduce the chance of slap.

It was almost a foregone conclusion that Buick would offer power brakes for 1953. As optional equipment, power brakes are becoming as common—and welcome—as power steering. Even the announcement of air conditioning didn't surprise me much.

12 Volts Give More Juice

What did please me was the addition of something that England has had for a long time. It's rare when you find any electrical trouble in those pint-size cars we import from Britain. Their owners never worry—a 12-volt system is insurance that even with a loose connection, the voltage drop won't be enough to disable a starter. The spark is hotter. Wiring is lighter.

For years American manufacturers have clung stubbornly to a six-volt system. Buick has 12 volts for '53. END

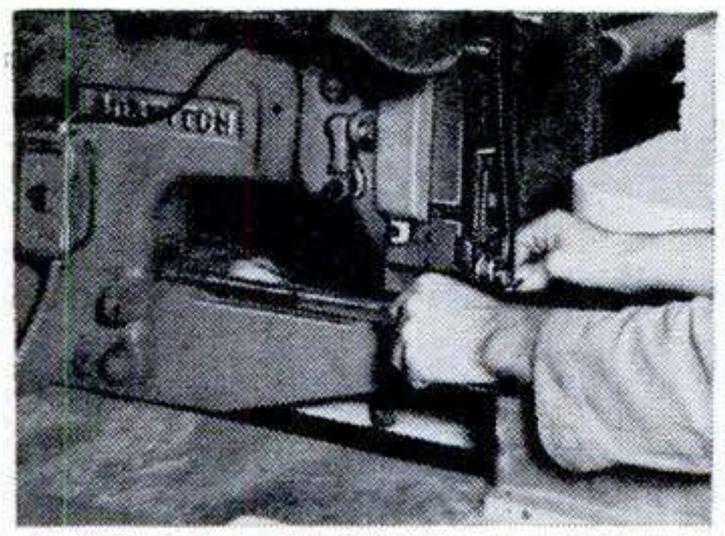
High-Hat Horn

Automobile salesman: "And what kind of a horn would you like, sir? Do you care for one with a good loud blast?"
Sailor: "No, I'm being transferred to Boston; just give me one with a refined sneer."—*L & N Magazine.*

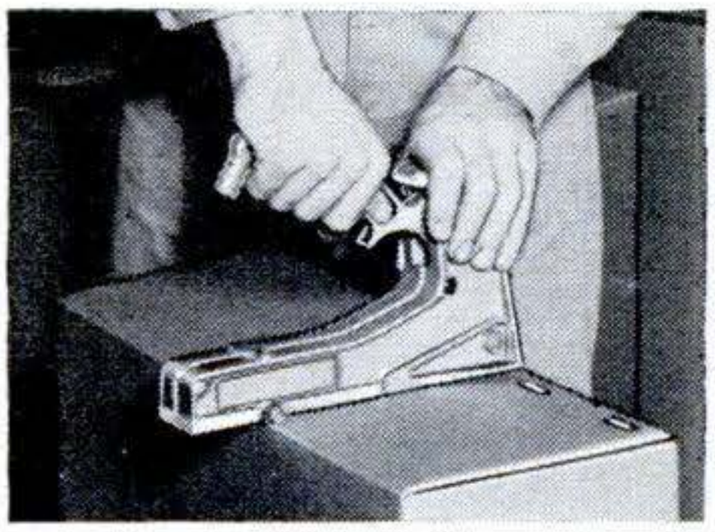
Copyrighted material

HOW BOSTITCH MAKES THESE JOBS EASY

Tacking upholstery to chair seat, Bostitch T5AD Air Driven Tacker lets operator do it with one hand. Just squeeze, and Bostitch Tacker shoots staple into work. Drives staples almost as fast as operator can guide tacker . . . four times faster than hammer and tacks. Does the job faster and with less effort. Eliminates mashed fingers, damaged work, sore mouth from holding tacks.



Attaching pad to chair seat, Bostitch Stitcher takes only one-third the time. Does a neater, cleaner job. Stitcher makes its own staples inexpensively out of steel wire. Surer, stronger, easier than hammer and tacks. And they are only one-tenth the cost.



Sealing cartons, Bostitch Autoclench does job three times faster than tape and glue. Makes strong, neat seal with wire staple. Ingenious action clinches on inside entirely from the outside. Eliminates mess of water, smell of glue, cost of tape.

BOSTITCH is solving fastening problems in hundreds of different industries. Speeds production, boosts profits, makes jobs easier for workers. Let the Bostitch economy man help you with your fastening job. 300 fieldmen in 123 cities in U. S. and Canada. Write for free booklet.

BOSTITCH, 522 Mechanic St., Westerly, R. I.

Please send me booklet of helpful suggestions for fastening.

Name _____

Company name _____

Address _____

City _____ *State* _____

BOSTITCH®

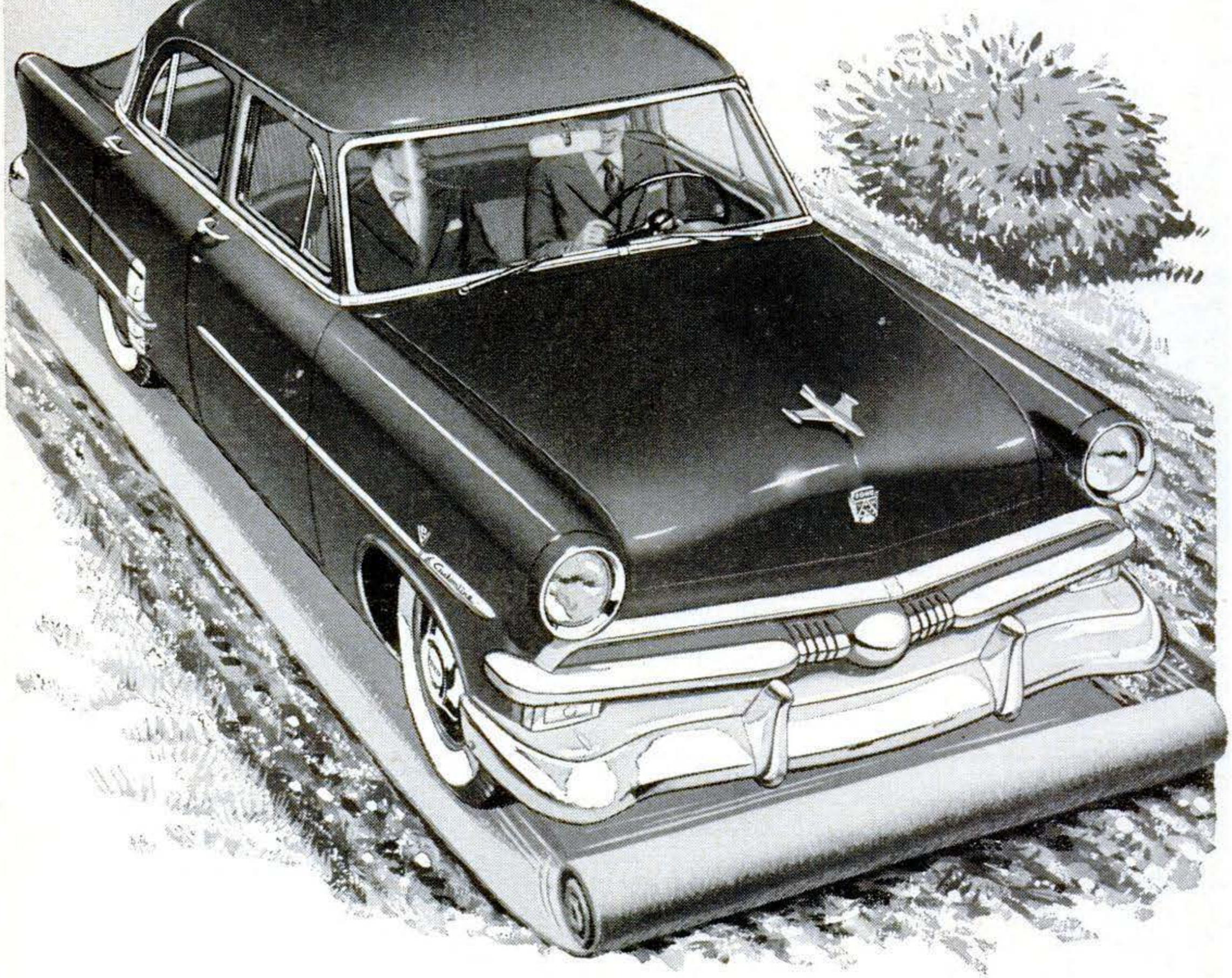
fastens it better AND FASTER with wire

Copyrighted material

The How of Ford's

Dr. Roy K. Marshall explains one of the 41 "Worth More" features of the '53 Ford

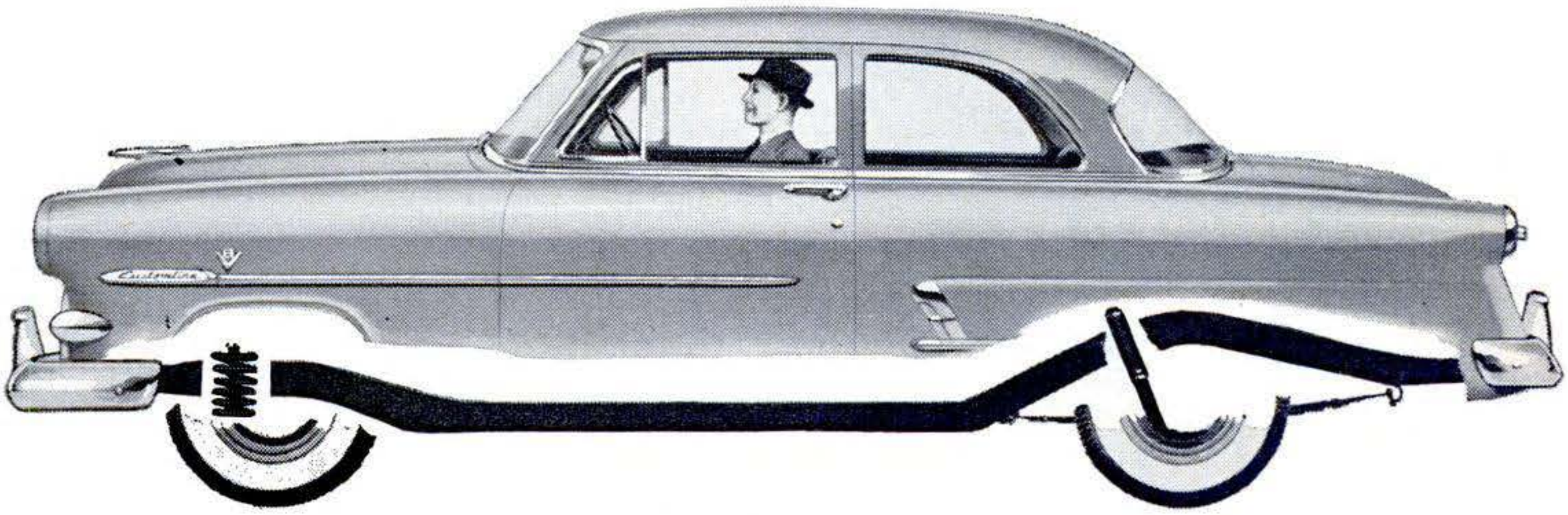
• "A popular misconception is that a car has to have excessive weight to ride smoothly and evenly. Yet, if weight were the main factor, then heavy trucks would ride better than passenger cars! The secret of a smooth ride is not weight but the coordinated action of such ride controlling elements as shock absorbers, front and rear suspension, tires, and seat springing. Ford engineers have developed this concept to a remarkable degree in the new '53 Ford . . . in fact Ford's new Miracle Ride reduces rough roads to 'carpet smoothness.' "



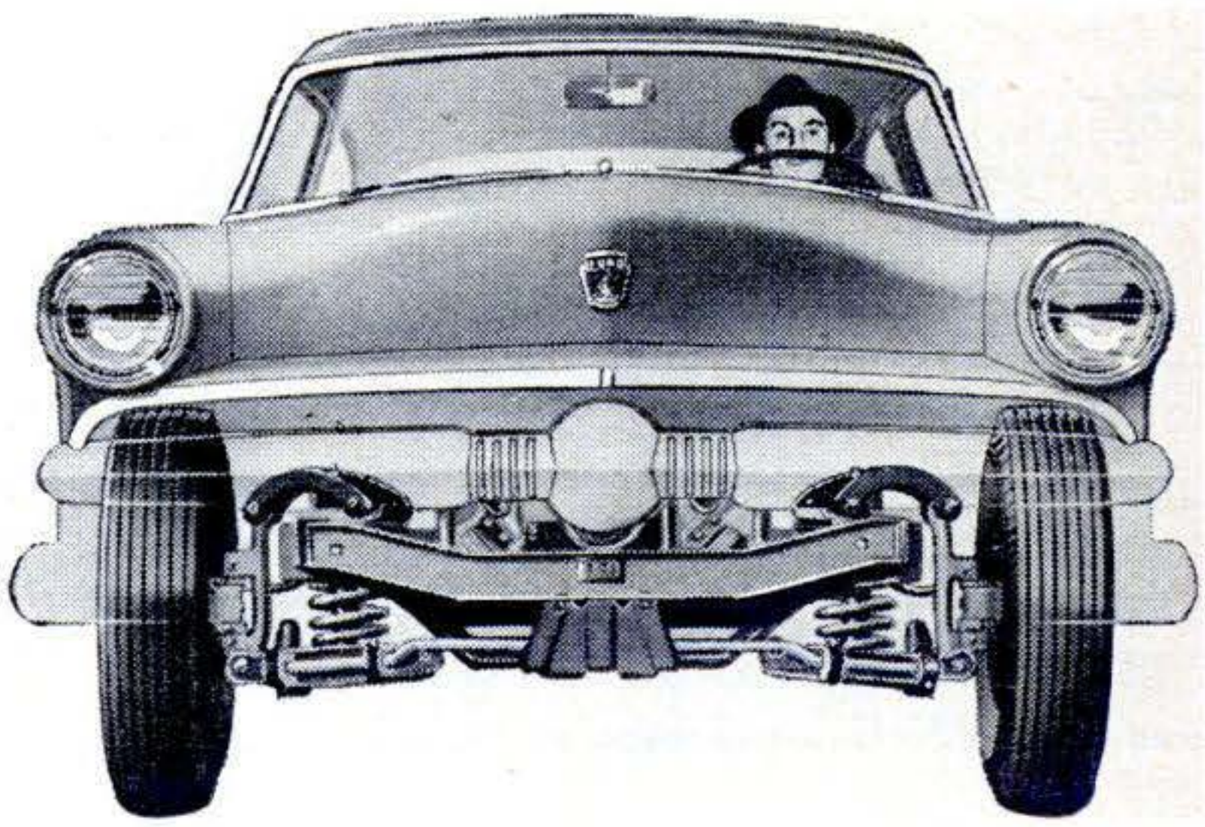
Visit your Ford Dealer and try Ford's Miracle Ride today

Copyrighted material

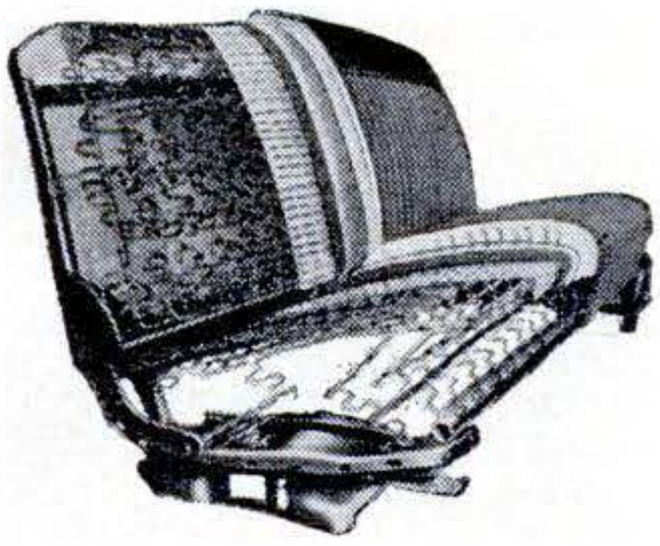
new Miracle Ride



How road shock is reduced 80%. "When Ford chassis engineers increased the vertical travel of the front wheels and softened the front suspension compression bumpers in the '53 Ford, they reduced front end road shock by as much as 80% ! Then rear springs were redesigned to just the right resiliency for precisely harmonized action with the front springs, so that the car moves up and down evenly without 'pitching' from front to rear. The development of more responsive shock absorber action was the next step—an all-important one to obtain perfect coordination between 'shocks' and springs at both front and rear. The result was an amazingly soft, smooth, *level* ride on boulevard or rough back road."



How a wider front tread increases stability. "A car with a wider tread in front is far less susceptible to sidesway, especially on curves. So Ford engineers designed the front tread two inches wider than the rear tread for greater stability. They mounted rear shock absorbers diagonally to further reduce 'heeling.' "



How foam rubber cushions help. "The little road shock that *can* get past the chassis gets no further than Ford's foam rubber cushions. They sit soft, but firm, on non-sag springs, add the comfort of living room chairs to the other advances of Ford's new Miracle Ride."

'53 Ford

White sidewall tires optional at extra cost. Equipment, accessories and trim subject to change without notice.

Copyrighted material

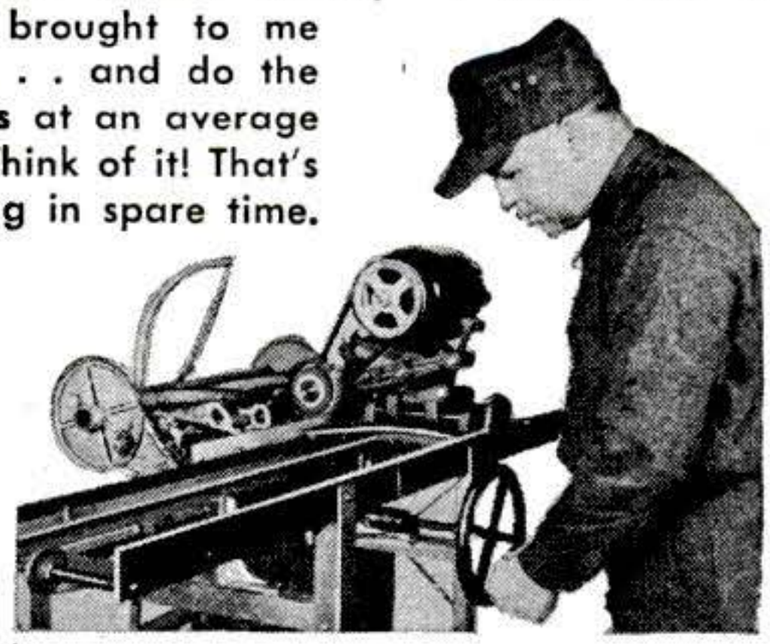
WHAT DO YOU WANT?

A GOOD BUSINESS OF YOUR OWN?

A HIGH PAY SPARE-TIME JOB?

Then FOLLOW THIS PROVED SUCCESS PLAN!

Here is your chance to be your own boss, secure financial independence, build a future for yourself and your family in a profitable business in your own garage or basement. J. S. of Michigan writes, "I figure my profits (last season) at over $1,000.00." Mr. C. H. R. of Ohio says, "This season I have taken in $3,688.20." J. P. of Pennsylvania writes "I spent only 40c for a newspaper ad and have done nearly $500.00 worth of business." Another owner writes, "I have had 4 mowers a day brought to me since last May . . . and do the grinding evenings at an average of $2.50 each." Think of it! That's $10.00 an evening in spare time. If you want to get ahead, make big money, be your own boss. Act Now. Write today for full details of our proved success plan.



ONLY ON THE UNIVERSAL LAWN MOWER GRINDER

can the inside face and edge of the stationary blade, and all reel blades, be ground to proper clearance

ALL IN ONE SET-UP

WITHOUT REMOVING ANY BLADE FROM THE MOWER

. . . that's why this business is simple, easy, and interesting. No experience or long hours of study are necessary. A leading National Magazine says, even an *inexperienced* worker can do a good job. We furnish complete instructions, everything you need to get started . . . But you must take the first step. Just fill in and mail the coupon below. Do it right now.

ROGERS MFG. CO., DEPT. P-23, LINDSEY, OHIO

SEND THIS COUPON *NOW*

ROGERS MFG. CO., Dept. P-23, Lindsey, Ohio
Please send me full details about the profit possibilities of Lawn Mower Sharpening.

NAME_____

ADDRESS_____

CITY_____ STATE_____

Gus Meets a Deadline

[*Continued from page 198*]

hard. When the line wouldn't accept any more air, he held the pressure, waiting to see if it would drop. But there was no leak. Gagan took his finger away and Gus blew through it again. No obstruction.

"Look, can you remember any other peculiar symptoms?"

"No." Gagan looked at his watch.

"Well, tell me exactly what was going on when it first happened."

"I was on a detour, lots of rocks and stuff worrying me, you know how they fly up. So I wasn't paying attention to the engine. It just quit."

Gus sighed.

"Ahh, don't worry about it, Gus! It's just the breaks. I can always get a fill-in from one of the mayor's assistants. It was the pictures that worried me most. And I think this wing of mine will be okay in a couple of days. Let's get going—if we can."

The Rocky Road to Trouble

The battery had received enough of a boost in the short running for Gus to start the car again without resorting to the crank. They rolled along for a while. Rather than ride the clutch, Gus stayed in second to keep the engine racing.

Suddenly, Gus lifted his foot from the gas, slowed to a stop and cut the ignition. "Your episode with the rocky detour . . . I just thought of a new angle."

Gus slid under the car and began tracing the fuel line from front to back where it hugged the frame. He had covered three-quarters of it and was ready to throw his hunch away when he found the trouble concealed in muck and grime. Gus tried repairing it with his pliers, but the untempered copper only cracked and tore. Painfully aware of the time left, Gus cut the offending section out, robbed the windshield wiper of its rubber hose, and joined the two ends of the fuel line.

Engine Was on a Starvation Diet

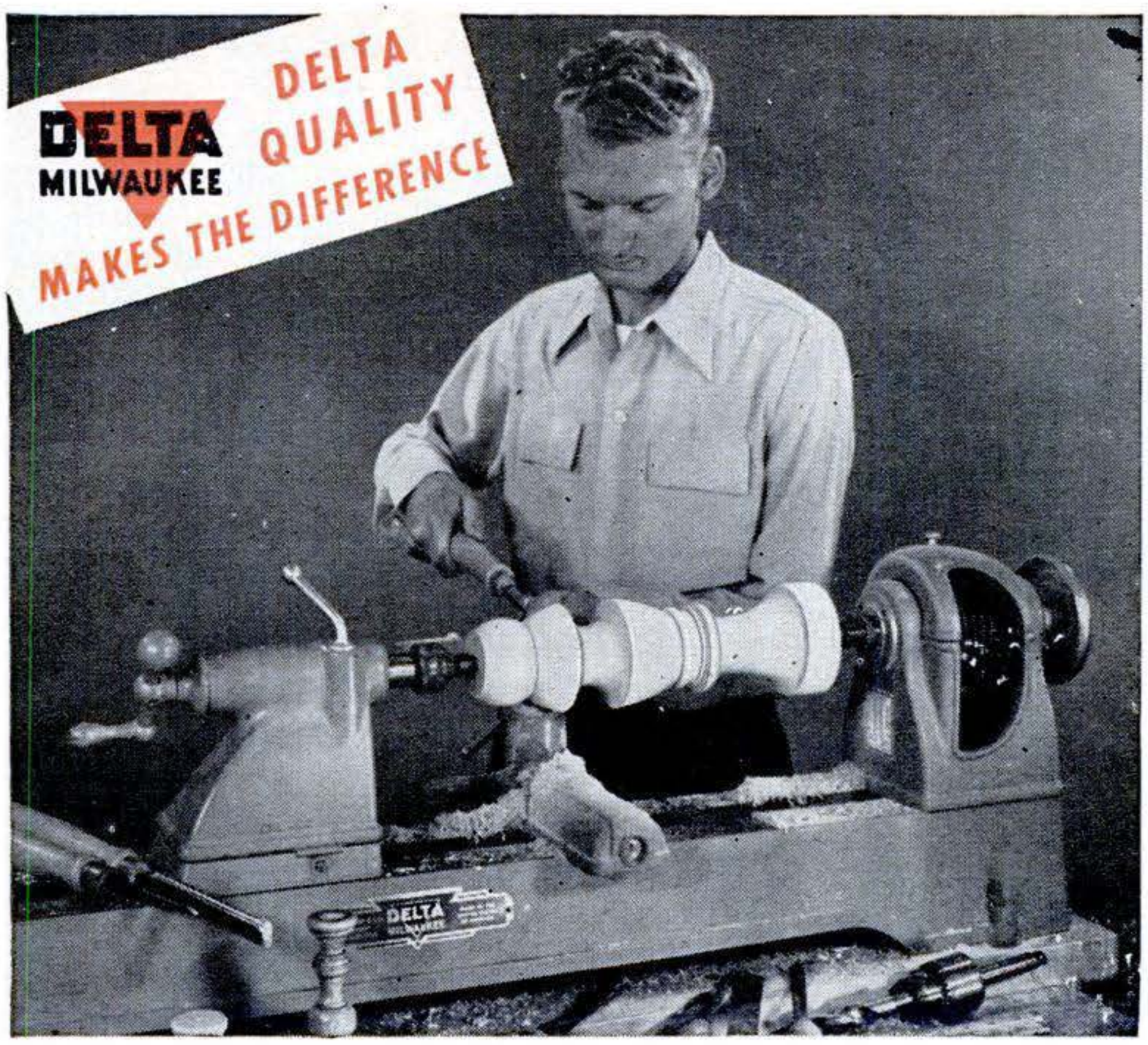
He got back in the car, where Gagan sat nursing his shoulder, and told him the story while he plugged the remainder of the wiper hose with a matchstick.

"I wish you had mentioned those rocks before." He started the car and drove off at a normal speed.

"Didn't seem important."

[*Continued on page 254*]

Copyrighted material



Know the Fun of Working with a Fine LATHE Know the Satisfaction of owning a DELTA

Check these outstanding quality features:

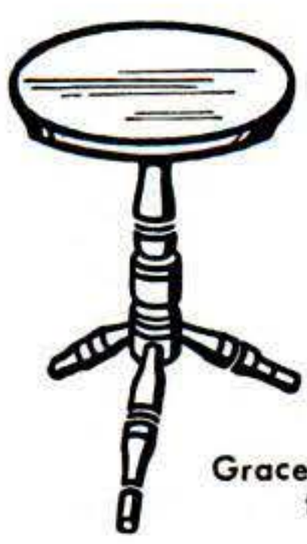
- heavily ribbed bed for strength and rigidity
- Timken tapered roller bearings carry the spindle
- double-row index mechanism built into headstock—invaluable for quick division of spindle or face-plate work
- No. 2 Morse Taper centers and other attachments for quick changes; heavy non-jamming thread on both ends of spindle permits use of either inboard or outboard face plates, grinding, polishing, or sanding accessories
- ⅝" hole through headstock for repetitive work on rods and dowels.
- graduated tail stock sleeve machined inside with a No. 2 Morse Taper and adjustable pointer for convenience in drilling work held in chuck
- handy lever locks tailstock to bed—ball lever at rear locks or unlocks tailstock sleeve in one easy movement
- set-over tailstock—easy to align—centers accurately
- slide rest and other attachments for light metal turning available at small cost
- 4 speeds—930, 1400, 2140, 3200 rpm

Make tables, chairs, lamps and scores of attractive items—do fine professional-looking work with a Delta Homecraft 11" Lathe.

A fine lathe means you can do work better, faster and easier. Yet a high quality machine doesn't mean high price—not when it is DELTA. Be sure to see this tool at your Delta Dealer's. Note its many quality features and its wonderful-value price.

Handy Deltacraft books teach you how to use power tools—give plans and instructions for many wonderful projects. Use the coupon.

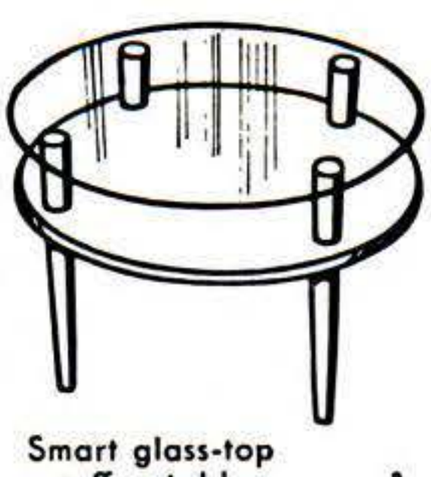
MAKE INTERESTING PROJECTS LIKE THESE:



Graceful colonial table

Brilliant "zebra" bowl is simple

Turned wine set



Smart glass-top coffee table

DELTA POWER TOOL DIVISION
ROCKWELL MANUFACTURING COMPANY
504B N. LEXINGTON AVENUE • PITTSBURGH 8, PA.

DELTA POWER TOOL DIVISION
ROCKWELL MANUFACTURING CO.
504B N. Lexington Avenue
Pittsburgh 8, Pa.

Please send the following:

- ☐ Delta Homecraft Catalog—10c enclosed.
- ☐ "Things to Make on Your Lathe"—25c enclosed.
- ☐ "Getting the Most Out of Your Lathe"—50c enclosed.

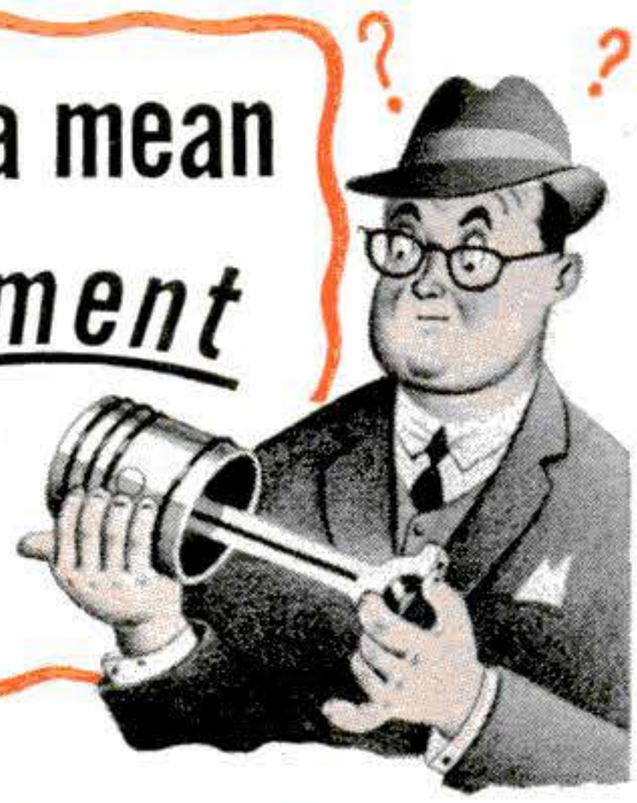
Name_____

Address_____

City_____ Zone_____ State_____

Copyrighted material

What d'ya mean replacement rings?



● Of course you know oil-pumping usually means worn-out piston rings—but maybe you don't realize all that ring *replacement* means.

As your engine gets older, the cylinders wear tapered and out-of-round. The engine runs hotter because of accumulations in the cooling system. It needs more oil on the cylinder walls. Yet this extra oil must be kept under full control —so you get generous lubrication without a bit of waste.

This calls for a special type of piston rings—*replacement* rings.

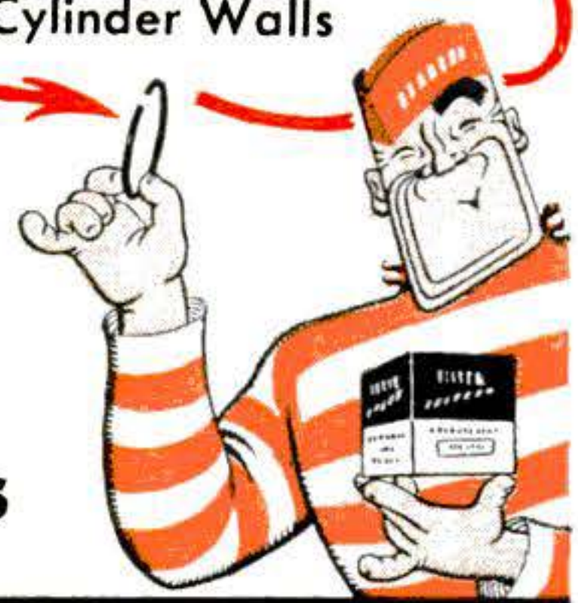
Hastings makes replacement rings exclusively . . . devotes all its research, on the highways and in the laboratory, to the particular replacement problems of each make and type of engine . . . for re-ring, re-bore and re-sleeve.

Hastings rings are nationally known for their ability to stop oil-pumping, check cylinder wear, restore engine performance.

At the first sign of oil-pumping or performance drop-off, go to your motor specialist. If rings are the trouble he will gladly install a Hastings Steel-Vent replacement set. Truly the best money you can spend on your car.

HASTINGS MANUFACTURING COMPANY, HASTINGS, MICHIGAN
HASTINGS LTD., TORONTO
Piston Rings, Spark Plugs, Oil Filters, Casite, Drout

these are the rings that are TOUGH but oh so GENTLE!
Tough on Oil-Pumping
Gentle on Cylinder Walls



HASTINGS
STEEL-VENT PISTON RINGS
Regular or Chrome-Faced

Motor Engineered FOR CARS, TRUCKS, BUSES AND TRACTORS

Gus Meets a Deadline

[Continued from page 252]

"Evidently a rock flew up and partially collapsed the line. I say partially, because you'll remember we found no sign of restriction before. Simply, your engine had to run fast in order to pull the fuel past the pinch in sufficient quantity. Slow running made your pump work too slow, and the restriction overpowered it. Your engine starved.

"The reason it didn't stall back in the alley was that I had leaned the mixture out and the fuel above the pinch lasted a little longer. When I get it back to the garage I'll install a new line for you."

"Well, that's one problem eliminated. But my shoulder . . . Did you ever try to take a one-arm shot with a heavy press camera? Gus. . ."

Gus Refuses to Play Photographer

"No!" Gus saw it coming. "Impossible! I won't do it!"

"But it's simple. I'll show you how."

"Look, you typewriter jockey, the only camera I ever used was a box Brownie. It takes a genius to run that one of yours!"

"Okay. So no photos of the mayor. Big stuff in a town like ours. It may mean my job. But you're a mechanic, not a newsman."

Gagan was still pulling the long-face routine when they drove into the area marked off for the ceremonies. The crowd was there already, and the mayor launched into the long-winded first paragraph of his speech. Gagan jumped out of the car and began struggling with some one-handed note taking, while Gus nervously cradled the expensive camera in his arms.

Then, in a popping of flash bulbs, somebody handed the mayor a shovel.

Everything Goes Wrong

"Gus, please. The camera is all set. You don't have to do anything but aim it and push the button! Everybody else is getting shots. Look, you want the paper to be scooped by these out-of-towners?"

"Okay, but don't say I didn't tell you!"

Gus stiffened his lip and aimed the camera. He snapped the shutter just as the mayor bent and marked his spot to dig.

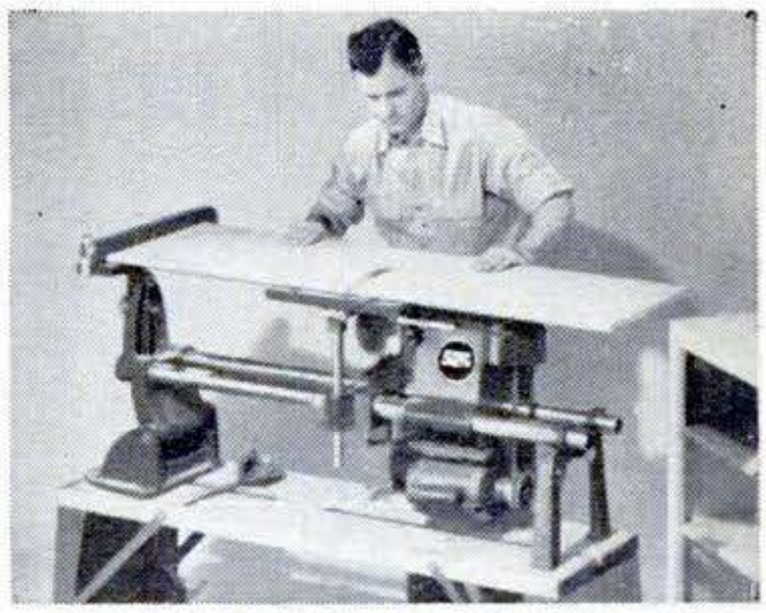
"No, no, no," Gagan whispered. "Get something dignified, not the seat of his pants!"

The second shot went off in Gus's face before he could aim it. Gagan groaned.

[Continued on page 256]

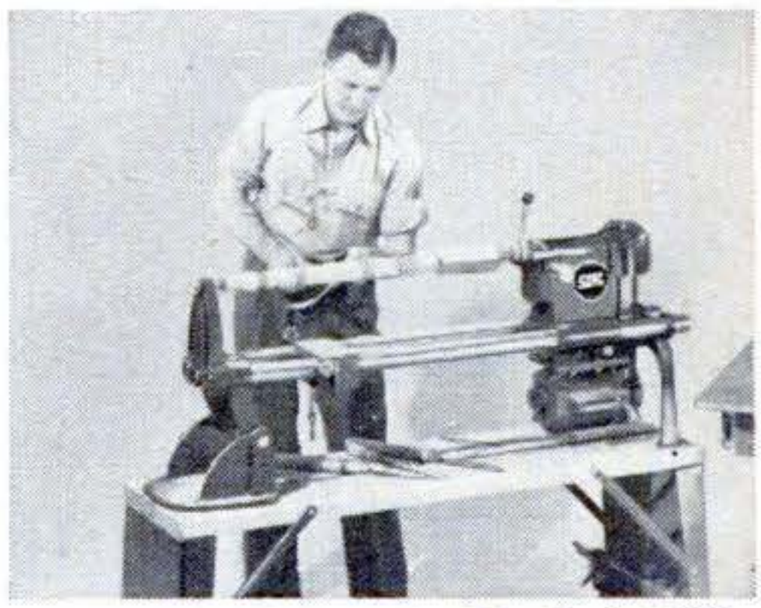
Copyrighted material

Will the power tool you buy have these quality features?

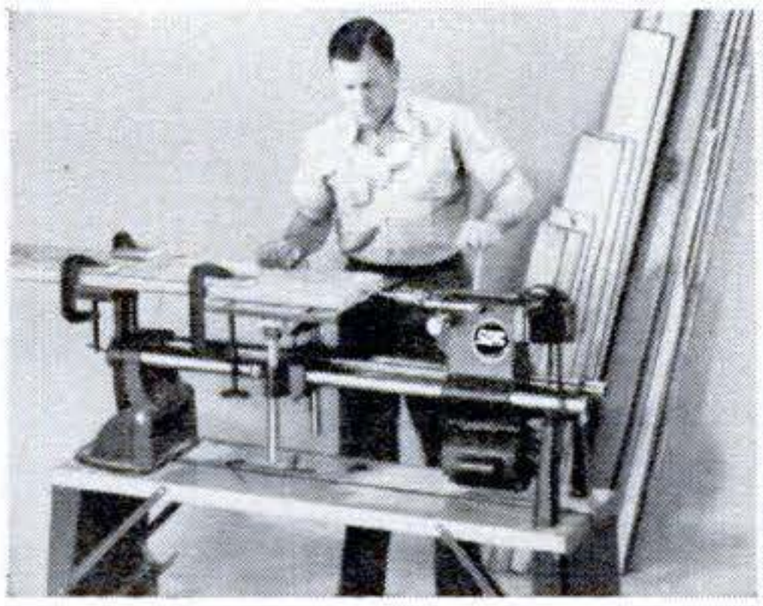


EXTRA CAPACITY AS CIRCULAR SAW Effective table size of 54" x 17" allows you to cut to center of an 8' panel. Up to 48" between fence and blade!

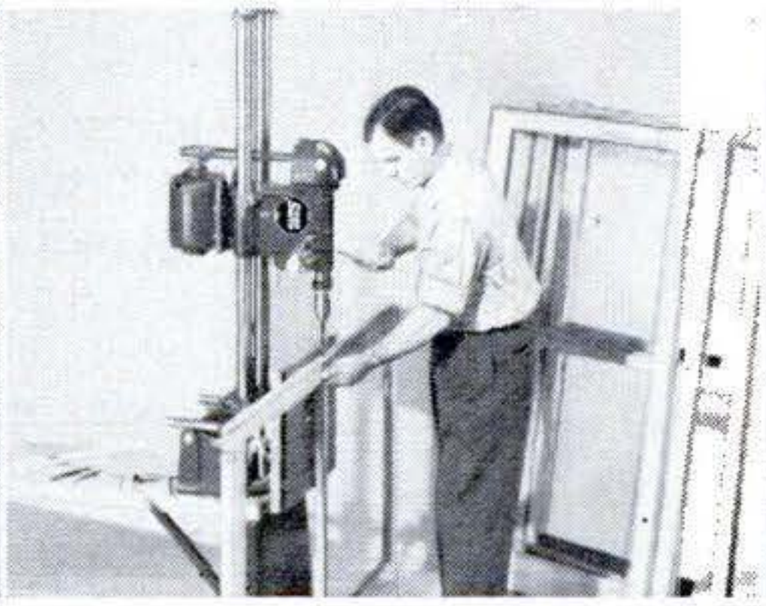
If you're thinking of a SHOPSMITH it has, because there's no costly duplication of parts. Therefore, SHOPSMITH can *afford* to give you top quality, through and through. You have *one* four-ball-bearing arbor assembly . . . *one* strong, substantial table . . . *one* precision headstock . . . *one* heavy-duty motor. Multi-purpose SHOPSMITH is the largest selling power tool in America because it packs the most quality in the smallest space at the lowest cost. Fill out and mail the coupon for the 16-page illustrated booklet—it's free!



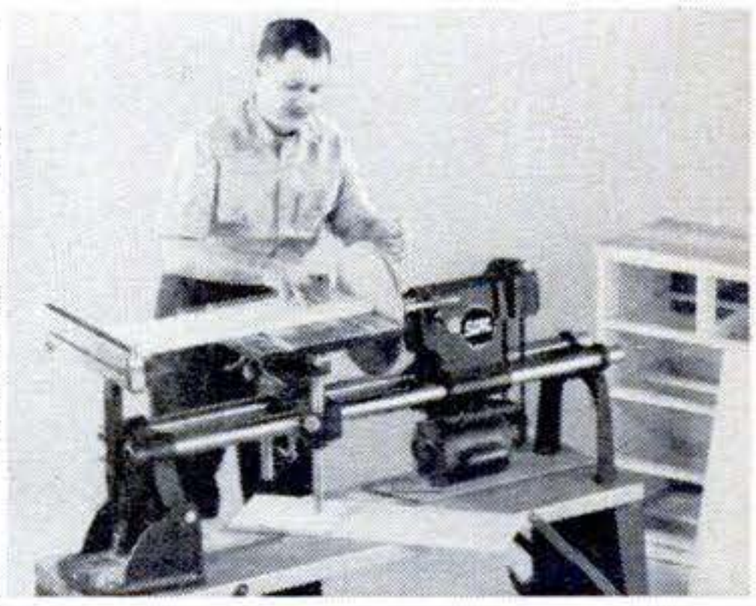
UNUSUAL CONVENIENCE AS LATHE Tool rest slides parallel to workpiece; instantly adjusted and locked in position *without stopping motor* Turn flat or hollow pieces while *facing* work!



LARGE CAPACITY AS HORIZONTAL DRILL PRESS Drills, bores, reams, countersinks. No limit to length of work! Makes dowel drilling easy, accurate; precise right-angle drilling.



REAL PRECISION AS VERTICAL DRILL PRESS Stress-proof ⅝" steel spindle, induction-hardened tip. 4 ball bearings, centerless-ground quill. Drills to center of 15" circle! 27" chuck to table.



EXTREME ACCURACY AS DISC SANDER Large, rigid table. Miter gauge is precision jig for any angle. Accurate "jointing" of edges. Disc can be fed *into* work for sanding duplicate parts.

Complete 5-tool unit **ONLY** **$189.50**

Motor* and bench extra

MULTI-PURPOSE SHOPSMITH®

*Special SHOPSMITH heavy-duty, ball-bearing motors: ½ h.p. **$34.50,** ¾ h.p. **$44.50.**

MAGNA ENGINEERING CORPORATION
Dept. 227-A, *at factory nearest you:*
12819 Coit Road, Cleveland 8, Ohio, OR
Menlo Park, California

Please send my free copy of the SHOPSMITH catalog and the name of my nearest dealer.

Name _____

Address _____

City _____

State _____

FREE! Fact-packed 16-page illustrated booklet!

Copyrighted material

Blizzard or Balmy..

Your Car Will Run Better

With A WELL-SERVICED

CARTER

CARBURETER

POWER CENTER ™

Sudden temperature changes need not make your winter driving a nightmare. A CARTER Carbureter, properly serviced, can give you really dependable carbureter performance—no matter what the thermometer says.

Be sure this winter! Have a new CARTER Carbureter installed in your car! Look under CARBURETER in the yellow pages of your phone book for the address of your nearest dealer.

REMEMBER...
You'll Get a Liberal Trade-in on Your Old Carbureter

CARTER CARBURETOR CORPORATION
St. Louis 7, Missouri
Division of American Car and Foundry Company

Gus Meets a Deadline

[*Continued from page 254*]

"Take it easy, will ya! Flaming curses on this shoulder. . . Look, I only brought six plates. Try to get one decent shot!"

No matter how he tried, and how Gagan directed him, nothing seemed to turn out right. Gus stewed about it all during the hurried trip back to town. He dropped Gagan at the *Times-Chronicle* office and took the car back to the Model Garage.

Gagan Calls Gus

Gus was home that evening when the phone rang. It was Gagan.

"I developed the pictures, Gus."

"You don't have to rub it in, Will."

"Three of them were absolutely useless, and the others gave the boss quite a surprise."

"I'm sorry. Why don't you tell him?"

"And lose my $100 bonus? Heck no!"

"Bonus—I don't get you. Bonus for what?"

"I wish I had dared to try something like this on the boss before. But he's always seemed so old-fashioned—"

"Wait a minute, Gagan! You didn't answer my question. Why a bonus?"

"For the pix."

"What pix? I thought they were all bad."

"Well, naturally, we couldn't use the one of your left nostril or the two double exposures. But the boss was crazy about the one of the mayor bending over to mark the spot to dig—his face *does* show—and the one of dirt flying at the lens with the mayor looking like he's standing in a grenade burst! What could be better, he says. None of the usual folderol of dignitary shaking hands with dignitary, waving magnanimously at the crowd, the delicate jabs with the shovel. Instead, Gagan, he says, you have shown our beloved mayor as a hard-working, industrious man, close to the soil, close to the pulse of humanity. . . That's what he said, Gus. How much of this bonus can I cut you in for?"

"Not one tarnished copper! Just never bring that camera around me again. I'm a box Brownie boy myself, pure and simple!"

END

Next Month: Gus becomes a short-term nurse.

Keep Moving

Mechanic: "My advice is to keep that car of yours moving."
Owner: "Why?"
Mechanic: "Well, if you ever stop, the cops will think it's an accident."—*Lone Star Scanner.*

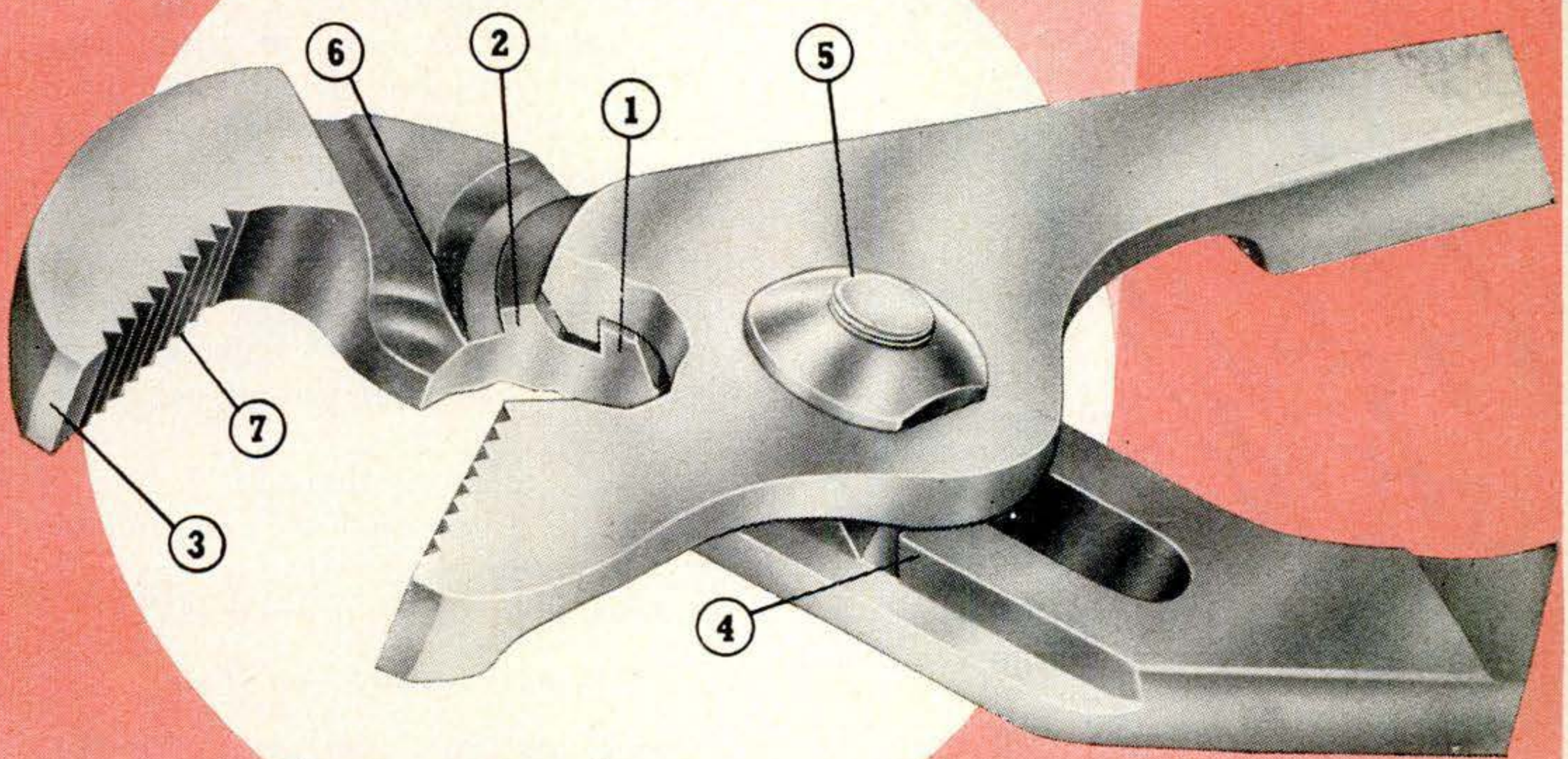
Copyrighted material

Here's the First NEW idea in plier design in years...

THE NEW No. 420

CHANNELLOCK **PLIER**

TRADE MARK REG. U. S. PATENT OFFICE



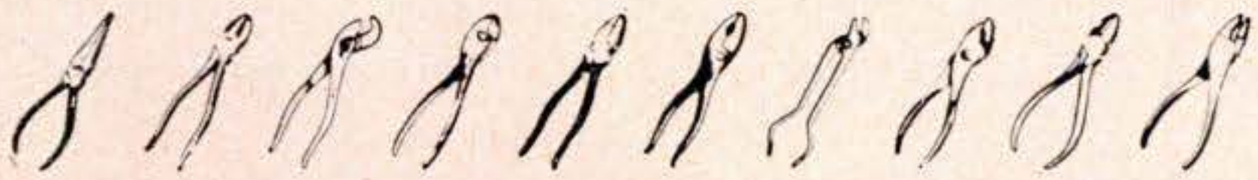
Look at these NEW features . . .

1. Interlocking principle positively prevents slipping under any load . . . the heavier the job, the greater the interlocking action.
2. New type wide base lugs provide maximum cross section strength . . . cannot shear.
3. New nose design provides greater utility for gripping small objects.
4. Patented design of tension edge provides more strength and eliminates stress concentration at channels.
5. New interlocking design minimizes stress on joint bolt.
6. Precision machined interlocking surfaces provide perfect fit, thus distributing pressure evenly.
7. "Rite Angle" teeth guarantee maximum bite and minimum wear.

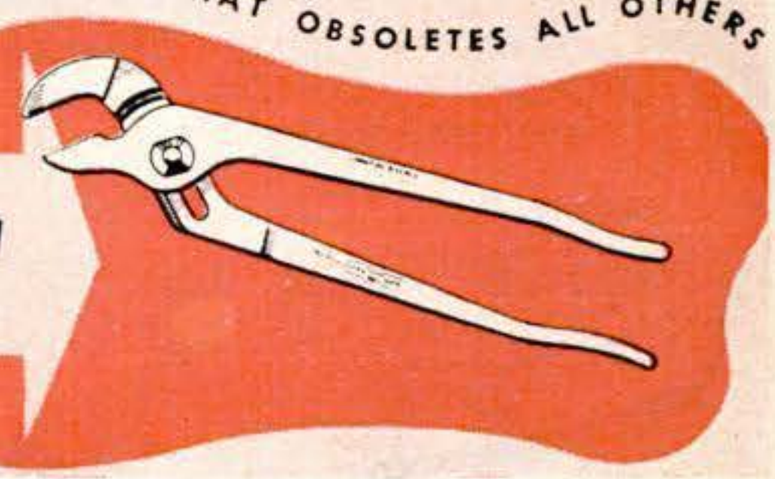
Here's the new, improved Channellock Plier—bringing to you new features which offer more positive gripping, greater strength and longer wear. The undercut interlocking channel is the first really new idea in plier design in years. Engineering skill has developed a plier with new patented features which give you the newest, strongest, most practical plier you can buy. Here is a plier that will last for years! Channellock Pliers—made only by Champion DeArment Tool Co., Meadville, Pa.

Send for your Catalog today.

Channellock pliers are listed in the Yellow Pages of most Telephone Directories under "Tools"



THE PLIER DESIGN THAT OBSOLETES ALL OTHERS



Only **CHAMPION DeARMENT** *makes* **CHANNELLOCK**

CHAMPION DeARMENT TOOL CO. • MEADVILLE, PA.

Copyrighted material

The minute you take hold of a GREENLEE tool, you can "feel" the fine quality and extra craftsmanship that goes into its making. And when you put it to work, you'll immediately see how GREENLEE tools are built to speed your jobs and help you finish them off with a skillful touch. The next time you buy Auger Bits, Chisels, Gouges, a Spiral Screw Driver, an Automatic Push Drill, a draw knife, or other fine hand tools . . . "get GREENLEE" . . . at better hardware and building supply dealers across America.

HANDY WOODWORKING CALCULATOR...ONLY 25¢
Converts linear to board feet, gives nail specifications, tool sharpening tips, compares woods, answers countless other questions in seconds.

GREENLEE TOOL CO. 2122 Columbia Avenue ROCKFORD, ILLINOIS: Enclosed is 25c (not stamps), send Handy Calculator to:

NAME.....

ADDRESS.....

CITY..... **STATE**.....

Auto Factory Almost Runs Itself

[*Continued from page 177*]

monorail for its 120-minute trip through the 1,125° tempering furnace.

Quenching again takes place at the end of the tempering, with automatic transfer to another monorail coming next. A shot-blast cleaning removes "burn-off" scale. The shafts then are taken from the monorail for center drilling—the establishment of center points upon which all subsequent machining is based. Inspectors gauge and test for possible defects, then send the cranks to shipping.

Ford's Cleveland engine plant is another standout example of automation, applied to a different phase of auto manufacture. Foundry-fresh engine blocks march like those animated TV commercials through a series of 43 machines in a line 1,545 feet long, where 530 cutting and drilling operations are performed on each block. From rough casting to finished product they are untouched by human hand.

At Buffalo, more than 2,000 tons of steel move through Ford's automated body-stamping plant daily, emerging as car roofs, floor pans and rear decks.

Plant Loads 50 Freight Cars

This layout, with 96 presses and 19 press lines, is big enough to allow indoor loading of a train of 50 freight cars.

Sheets of steel are loaded automatically into the first huge stamping press on a line. Sections are blanked, formed and sped on their way for flanging, piercing, cutting and trimming. Completely stamped body components from two or more press lines move together into electric welding machines and are joined into finished parts. Throughout, automatic loaders, extractors, turn-over devices and "iron hands" take over the heavy labor once performed by human brawn. END

Fish Story

Housewife: "I don't like the looks of that codfish."
Storekeeper: "Well, if you want looks, why don't you buy a goldfish?"—*Saw Engineer.*

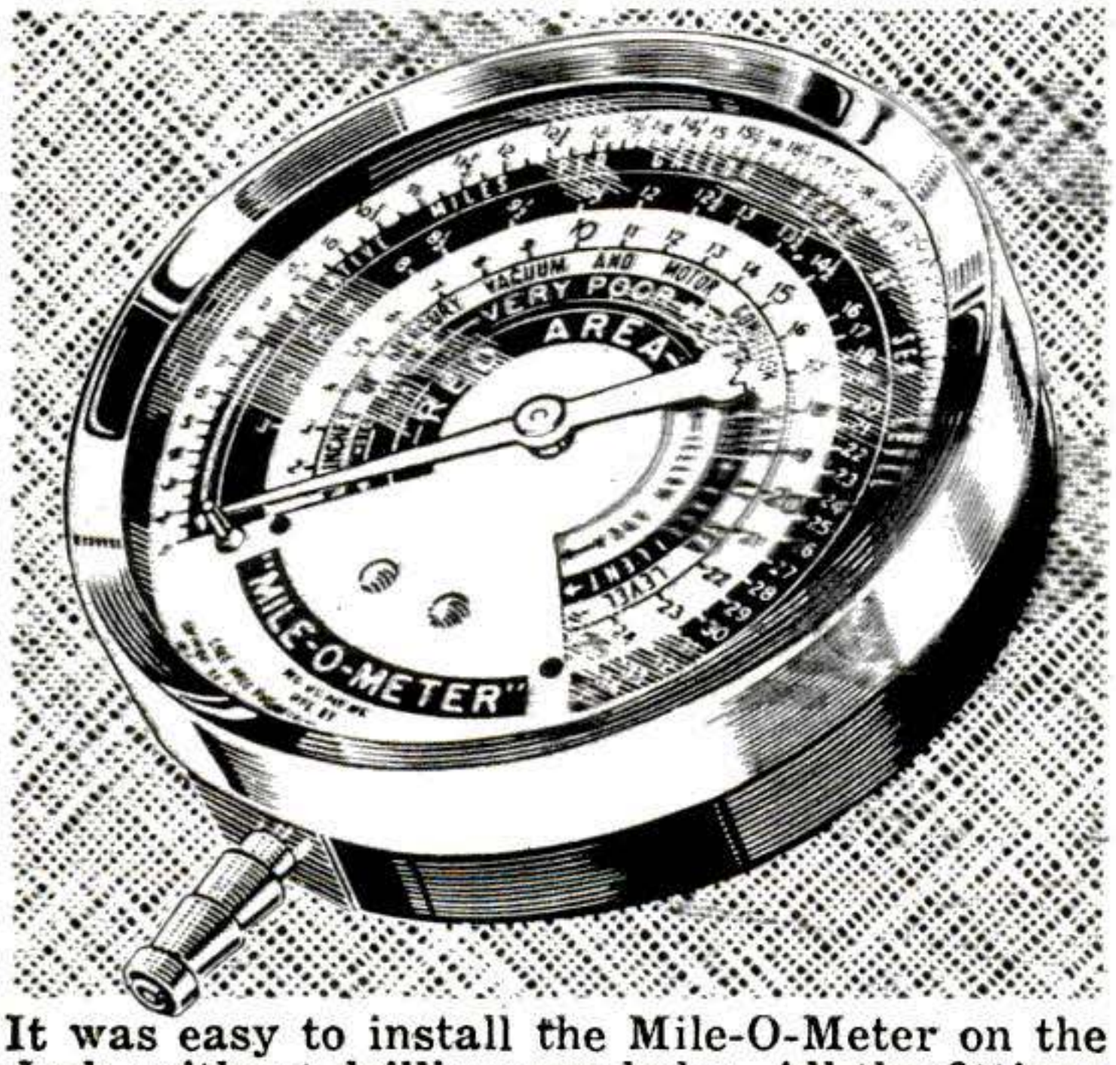
Copyrighted material

Copyrighted material

I STARTED SAVING WHEN I INSTALLED A MILE-O-METER

by Raymond Parsons

I started to save the day I installed a Mile-O-Meter on my dashboard . . . my new seat covers represent the latest proof of that! I get about three or four more miles to every gallon, because the Mile-O-Meter warns me when I'm wasting gas . . . and tells me the relative miles-per-gallon I'm getting as I drive. Using the engine condition scale, I can *see*, instead of *hear*, when my engine needs attention. And, I'm able to make many of the repairs and tune-ups myself, because the Mile-O-Meter shows me how.



It was easy to install the Mile-O-Meter on the dash, without drilling any holes. All the fittings were supplied. All I did was connect it to the intake manifold . . . the directions showed me how. Then I started to save.

I'm really sold on the Mile-O-Meter. If you don't have one on your dashboard, you're probably wasting just as much money as I once did. Actually, you've got everything to gain, and nothing to lose, because they're always sold on a "money back if not satisfied" basis. You ought to send your order in right away.

Raymond Parsons, 90 Tower Avenue, So. Weymouth, Mass., is typical of the thousands of enthusiastic Mile-O-Meter owners.

$14.95
Deluxe Illuminated.
• 3⅝" diameter.
• Chrome trim.

$9.75
• Standard Model.
• 2⅝" diameter.
• Plated trim.

ORDER NOW

SEND ..... DELUXE ..... STANDARD
MILE-O-METERS AT $.....
NAME .....
ADDRESS .....
CITY ..... ZONE ( ) STATE .....
☐ Check Enclosed ☐ Money Order Enclosed ☐ Send C.O.D.

Orders are shipped within 24 hours anywhere in the U. S. A. We pay postage when payment accompanies order. Add 35c for special delivery, if desired. Each Mile-O-Meter is gift-packaged, with all accessories and instructions included.

GALE HALL ENGINEERING CORP. DEPT. 322
NORTH HAMPTON, NEW HAMPSHIRE

Does Anybody Live on Mars?

[*Continued from page 130*]

deserts. Sensitive instruments have recently confirmed this hypothesis. Any reflecting surface tends to polarize light —the amount of polarization depending on the angle of incidence and the nature of the reflecting material. If the angle of incidence is known and if the polarization can be measured, the nature of the reflector may be discovered. Using a supersensitive polarimeter with a powerful telescope, a French astronomer has found that the Martian deserts are covered with the same volcanic ash that covers the moon. Even more recently, astronomers at the Mount Wilson Observatory in California have found that silica, a basic component of sand, is present in large quantities on the Martian deserts.

Hot Days, Cold Nights

Surface temperature is a crucial factor in deciding on the possibility of life as we know it on Mars. Using a thermocouple, we have found that the climate on Mars is severe but not impossible.

Like the earth, the temperature range of Mars varies with the seasons and the latitude. However, since Mars is farther from the sun, its average thermometer reading is about 60° colder than ours. The thin Martian atmosphere also permits enormous variations in the temperature from day to night and season to season. Thus, on a summer day at noon the Martian equator may reach nearly 90°. Yet at night the mercury will drop to 40 below or colder at the same spot. So human beings could survive the Martian climate if they were properly equipped.

Lowell believed the Martian polar caps were made of snow and ice which melted in summer. And modern instruments prove that Lowell was right.

If there were on Mars large bodies of water, like oceans or lakes, astronomers could see the reflection of the sun on their surfaces and they could detect water vapor in the planet's atmosphere. The absence of both these signs proves that Mars, true to Lowell's prediction, is a

[*Continued on page 262*]

Save Money!

You can install a beautiful

KENTILE FLOOR

like this for only $22.90*

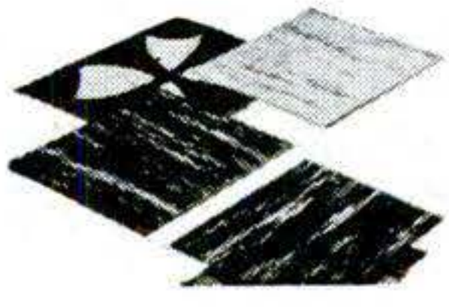
A KENTILE FLOOR LIKE THIS COSTS $8 TO $20 LESS THAN TILE FLOORS OF MANY OTHER MATERIALS . . . YET KENTILE IS GUARANTEED!

Only KENTILE DEALERS have these money-saving buys in GUARANTEED FLOORS

Compare for price . . . beauty . . . easy cleaning and long wear . . . and you'll choose Kentile. Not even the hardest kind of use can dull this floor. The 25 "new-as-tomorrow" colors can't wear off...they go clear through the tough, durable tile. Just mop and wax occasionally—you'll see Kentile sparkle like new. Because Kentile gives more value, it's preferred by more people than any other resilient tile.

* Price quoted is for a floor 14′ x 7′ installed by you. Your floor may cost less or slightly more depending on size, colors and freight rates. See your local Kentile Dealer for FREE estimate. He's listed in your classified directory under FLOORS. In Canada, T. Eaton Co., Ltd.

KENTILE, INC., 58 2nd Ave., Dept. L-1, Brooklyn 15, N. Y.



KENTILE®

The Asphalt Tile of Enduring Beauty

Copyright 1953, Kentile, Inc.

Copyrighted material

FOR FASTER, SCRATCH-FREE SANDING . . . . . USE DREMEL STRAIGHT-LINE ACTION SANDERS

Price includes sturdy steel storage case; 25 asstd. abrasives; 1 sheepskin pad.

WORLD'S FINEST FINISHING SANDERS—Patented Straight-Line Action sands with the grain of the wood—eliminates cross grain scratches and orbital swirls.

MORE SANDING SURFACE PER DOLLAR means more work done. Faster action (14,400 sanding strokes per min.); more than **three times** as fast as other type sanders!

POWERFUL, high-speed, lifetime reciprocating motor (110 V. 60 cycle A.C.)

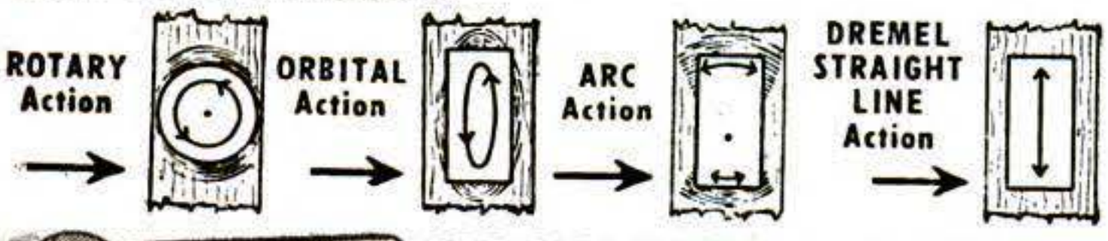
EASY. ONE-HAND OPERATION less tiring on vertical and overhead operations. Sands into corners—other tight places.

TROUBLE-FREE USE assured. Only two moving parts; never needs oiling. No armature, brushes, gears or bearings to wear out and replace.

Professional Model 2000 is a favorite with carpenters, painters, contractors and family handymen! Ideal for finish sanding on flush doors, panelling, cabinets, etc. Superb for waxing cars, polishing furniture, etc.

A "must" for dry-wall joints. Sands into tight corners. Ideal for refinishing.

TRY THIS SIMPLE TEST: Sand a piece of wood by hand, using the four motions below. Note slightest cross-grain action produces scratches and swirl marks. Sanding *with-the-grain* gives scratch-free satin finish. This test proves conclusively why professional craftsmen always sand with-the-grain—never cross grain.



FOR HOBBYISTS . . . HANDYMEN AND HOUSEWIVES

Lighter-capacity Model "A" is an all-purpose sander—polisher—massager. Takes the work out of polishing, sanding, etc. Effective body massager, too! Weight 2½ lbs; has 12 sq. in. (2⅜"x5⅜") sanding pad surface. Price includes 6 abrasive sheets; 1 sheepskin; 1 felt pad. **$14.85**

FREE—16 PAGE SANDING GUIDE

A "How-To-Do-It" booklet, full of helpful hints on sanding and refinishing procedures, is packed *free* with each Dremel Sander. Extra copies available for $.25.

SEE YOUR DEALER! If he can't supply, order direct on five day trial, money-back guarantee. Remit in full for postpd. shipment; or, send $2 now, pay postman balance plus postage and C.O.D.

DREMEL MFG. CO. - Dept. 123-B RACINE, WIS.

DREMEL

Does Anybody Live on Mars?

[Continued from page 260]

very dry planet. What happens, then, to the water from the melted polar ice? For one thing, despite the huge area of the Martian polar caps, there is little water in them. They are not like the earth's polar fields of snow and ice, hundreds and even thousands of feet deep. The Martian caps are thin, anywhere from 1/10 of an inch to 10 inches thick.

Some Plants May Live

What happens to this water in summer is still a matter of dispute. Many astronomers believe that the moisture is picked up by the clouds and deposited in the form of rain or dew. Others hold that it is carried away by the spongy soil.

As the ice caps melt, the dark regions of Mars change color, the change progressing from pole to equator at 28 miles per day. Lowell's supposition that these color changes are caused by living plants which spring up with the release of polar moisture is still widely held. In fact, there is new evidence to support the theory. Light from Mars' dark areas is similar in some respects to that reflected from lichens and mosses on the earth; and of all the plants known to botanists, only lichens and mosses could survive in Mars' cold, thin, oxygen-starved atmosphere.

Weird Creatures Sidestepped

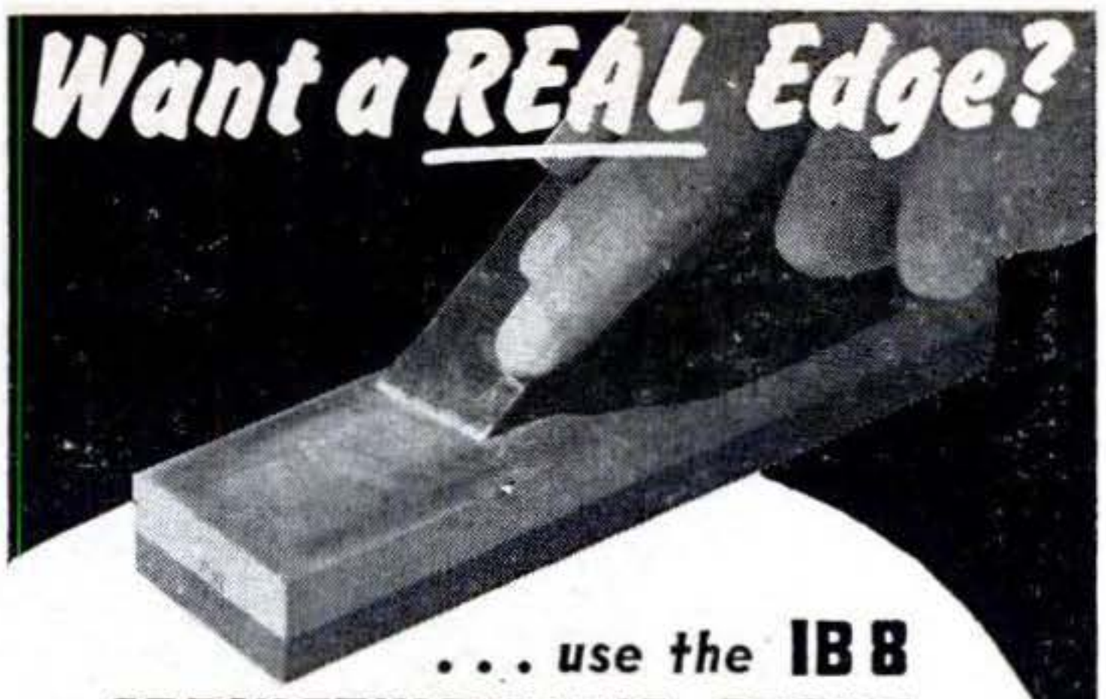
There is general agreement that life *of some kind* actually exists on the red planet. But there is also a consensus that animal life, as we know it, is either nonexistent or extremely primitive. For although many species of earth plants can survive in an atmosphere of nitrogen and carbon dioxide, manufacturing the oxygen they need through photosynthesis, only a few lowly worms in the whole animal kingdom can live without oxygen.

Of course the phrase, "life as we know it," is all-important when scientists discuss this question. It is easy to imagine forms of animal life, which, like plants, could live on carbon dioxide. But scien-

[Continued on page 264]

Copyrighted material

Want a REAL Edge?



. . . use the IB B CABINETMAKER'S STONE

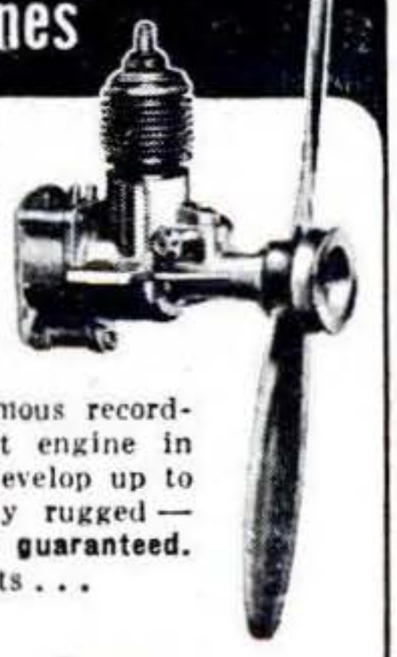
•The professionals use this Combination INDIA® Stone. It has fast-cutting coarse abrasive on one side and fine on the other for a finished edge that's the last word in keenness — the kind of edge that makes those beautiful long plane chips — an edge that gives you a thrill to use. There's no other stone like the "Cabinetmaker's stone". At good hardware stores, $2.43.

Read the "How To Sharpen" Book
32 illustrated pages that make sharpening easy. Send 10¢ to Dept. PS-2, Behr-Manning, Troy, N. Y.

BEHR-MANNING CORPORATION
division of NORTON Company
Coated Abrasives · Sharpening Stones · Masking Tapes

OK **Save Money, Assemble 'em Yourself!**

Model Plane Engines



● Here's a buy for you modelers who like to tinker. Assemble your Cub .049 with an OK Power Kit—a $6.15 value for only $4.95. By saving **us** the cost of assembling, **you** learn the principles of internal combustion engines . . . have the fun of building a real powerplant from prop to fuel tank . . . **and Save $1.20!**

● On a weight/output ratio these famous record-smashing Cubs equal a full-size aircraft engine in power. They weigh as little as 1½ oz.—develop up to 15,000 rpm! Crankcases are exceptionally rugged — cylinders and shafts are crashproof. **Fully guaranteed.** Available in two types of money-saving kits . . .

OK CUB .049 POWER KIT

Kit contains:

.049 Cub (Unassembled) value	$5.25
Combination engine mount and fuel tank, neoprene tubing . . . . . value	.50
Spin Starter . . . . . value	.25
Propeller . . . . . value	.15
Total Value . . .	$6.15
Your Cost	4.95
You Save	$1.20

COMBINATION PACKAGE

(Includes assembled engine, prop and tank.)

Cub .039 . . $4.95 Cub .074 . . $6.75
Cub .049 . . $5.75 Cub .099 . . $7.75

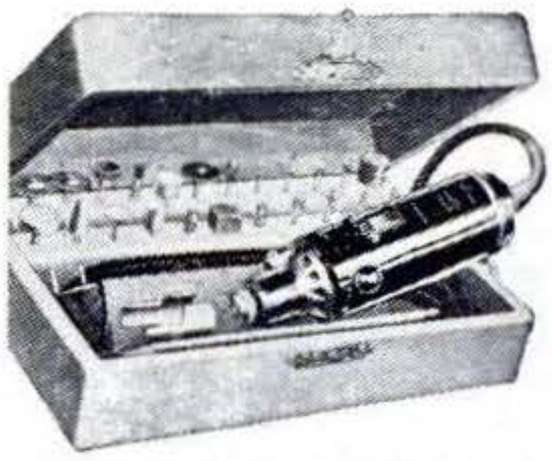
See your Hobby Shop Dealer. If not available send check or money order. Add 25c for postage. Sorry, no C.O.D's.

Herkimer Tool & Model Works, 176 Harter St., Herkimer, N.Y.

MOST PRACTICAL TOOLS YOU CAN OWN!

DREMEL Electric MOTO-TOOL
1001 USES AROUND THE HOME AND SHOP

Here is the fastest (27,000 r.p.m.) most powerful tool in its class — THE ORIGINAL POCKET-SIZE MACHINE SHOP. A jack of all trades around the workshop, it is indispensable for carving, drilling, grinding, and for sharpening tools, scissors, kitchen knives, garden tools, lawn mower blades, etc. More versatile than a ¼" electric drill as it is so light weight (13 oz.) and handy for so many small jobs. Perfect for drilling small holes to hang pictures, installing cabinet hardware, hardwood trim. Powerful, 110 V. A.C.-D.C. motor. A tool built for years of lasting service.



MOTO-TOOL NO. 2 Offers more convenience and long life features for the money than any other hand grinder. Thousands of satisfied users. Moto-Tool No. 2 (with 1 emery wheel point) **$16.50**

KIT NO. 2 Includes Model 2 Moto-Tool and 23 Accessories (High-Speed Steel Cutters, Grinding Wheels, Polishers). Packed in sturdy hardwood case **$23.50**

A PRECISION TOOL WIDELY USED IN INDUSTRY

For Sharpening Tools

Speeds Up Repair Jobs

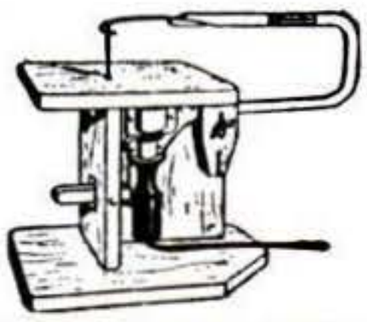
Great for Hobbyists

AMAZING FOOT-A-MINUTE
(7,200 Strokes Per Min.)
CUTTING SPEED!

ELECTRIC DREMEL POWER TOOLS
ONLY **$5.85** with 3 saw blades

FREE PROJECT PLANS

Make your own jig saw. Complete plans and six project patterns included FREE.



FAMOUS DREMEL ELECTRIC MOTO-SAW

Here is a genuine craftsman's tool with dozens of household and workshop uses. It is perfect for all sorts of coping and jig saw work, making window valances, knick-knacks, hobby projects, etc. High-speed, reciprocating-type motor easily cuts asphalt and rubber tile, also masonite and formica — wood up to ¾". Perfectly safe for children—so easy to handle that women love to use it. Has only two moving parts, never needs oiling. A high quality tool used by craftsmen, tile layers, and carpenters.

Cuts scrolls like magic!

SEE YOUR DEALER! If he can't supply, order direct on five-day trial, money-back guarantee. Remit in full for postpd. shipment; or, send $2. now, pay postman balance plus postage and C.O.D.

DREMEL MFG. CO. Dept. 123-B, Racine, Wis.

Copyrighted material

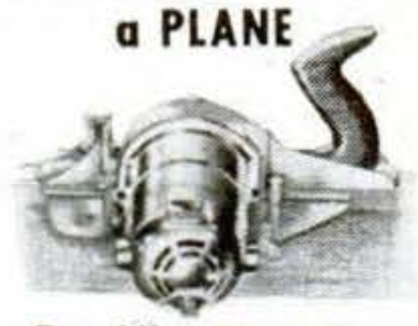
Save $89.50

on this **PORTER-CABLE** combination!

STARTS as a ROUTER

Router Complete with base and motor—$49.50

BECOMES a PLANE



By adding Plane Attachment — $25.00

THEN a SHAPER

By adding Shaper Table — $24.00

Interchangeable Motor powers 3 tools . . . saves cost of 2 motors!

All 3 Tools for only $98.50

For expert woodworking, build your home workshop around this Porter-Cable Tool combination—production tools used by Builders—and save $89.50!

As a ROUTER—you can tongue, groove, rabbet, dovetail, do scrollwork, cut contours and beaded edges on wood, composition or plastic.

As a PLANE—you can shave off wood at high speed—taking cuts from 1/64" to 3/32" deep—without a wave or ripple! Attachment for sharpening right on the job.

As a SHAPER—you can edge irregular pieces; joint strips accurately, even narrow and short pieces; make hundreds of fancy cuts for cabinets, furniture, trim, toys, picture framing, molding, etc.

Purchased separately, all tools complete with motors would cost you $188.00. But, with *one* Interchangeable Motor mounted in the proper attachments, you get all 3 tools for only $98.50 — a saving of $89.50!

See this great money-saving combination at your Porter-Cable dealer's. Or mail coupon today for full details.

PORTER-CABLE Machine Co.
1462 N. Salina St., Syracuse 8, N. Y.
Send me full information about Porter-Cable Router, Plane and Shaper Combination . . . also name of nearest Porter-Cable dealer.
Name
Address State
City

Manufacturers of SPEEDMATIC and GUILD Electric Tools
In Canada write: Strongridge, Ltd., London, Ont.

Does Anybody Live on Mars?

[Continued from page 262]

tists like to discuss what they have information about and can measure with instruments. They know only life as it exists on the Earth, and they prefer to leave speculation about other kinds of life or half-life to science fiction.

Even from this coldly scientific point of view, it is possible that Lowell's highly intelligent race of Martians may still be living on the planet, even though all other forms of animal life have long since perished. For most scientists believe that Mars once had an oxygen atmosphere very similar to our own. After millions of years this oxygen may have combined with the iron in the Martian soil to form iron rust, which, one theory holds, gives Mars its distinctive red color.

Meanwhile, an intelligent race may have mastered the secret of artificial photosynthesis that our own chemists hope to crack before long. Thus, Martians may be manufacturing their own oxygen from the plentiful carbon dioxide in their atmosphere. Or they may be extracting the life-giving gas directly from the rusty Martian soil by chemical processes.

The climate on the planet was once much warmer than it is now, and an intelligent race would have had millions of years to lick the problem of frigid nights.

Canals Would Prove Life Existed

In trying to determine scientifically whether there is an intelligent race on Mars, the "canals" are by far our most significant clue. If the dusky streaks really are canals, then Lowell's case is clinched. But the exasperating fact is that with all our modern instruments we have been able to get very little conclusive evidence.

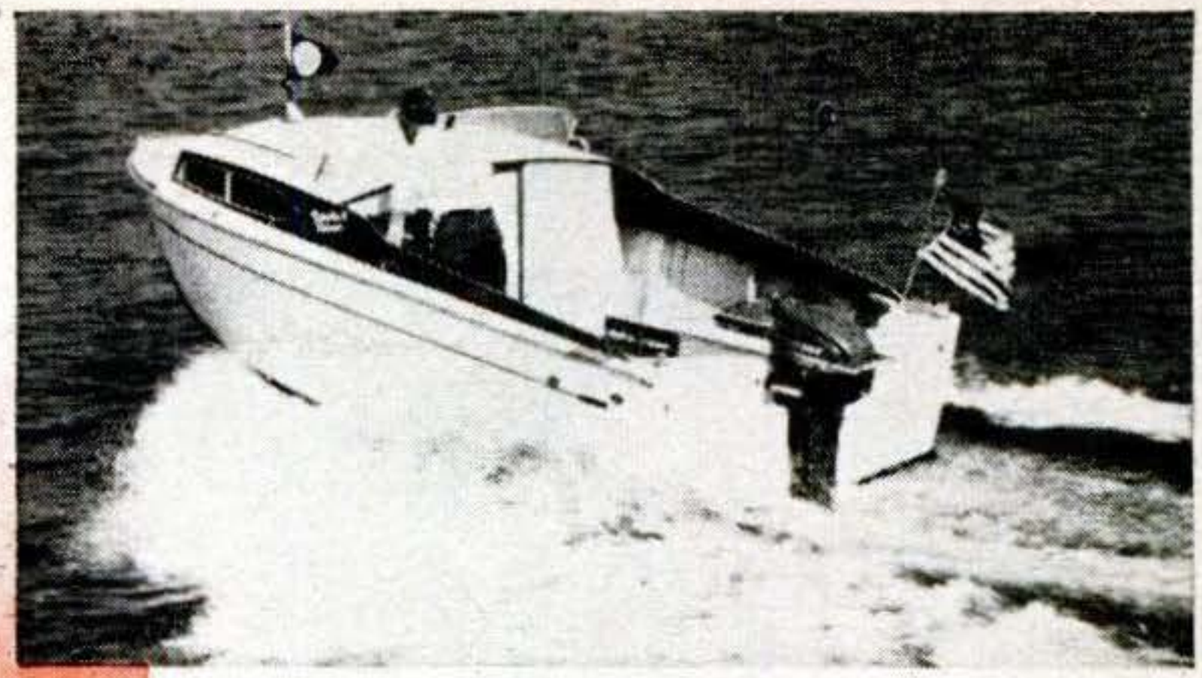
When Lowell first called them Martian-made canals, and drew detailed maps of their location, astronomers in every country galloped to their instruments. Many denounced him. Some claimed that the canals were a figment of Lowell's imagination, that no such streaks could be seen. Others, using pow-

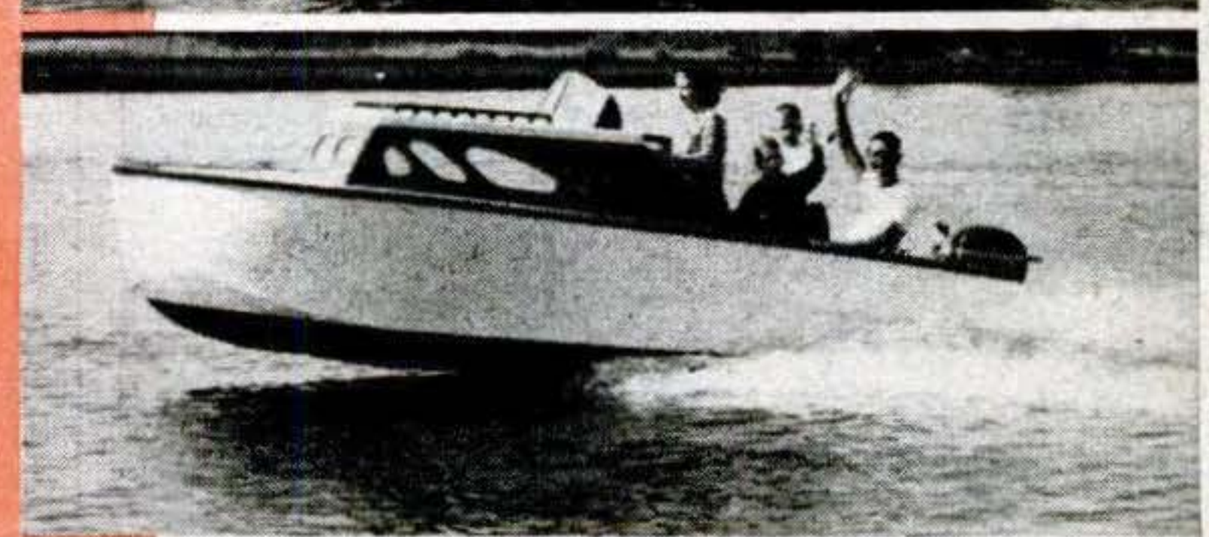
[Continued on page 266]

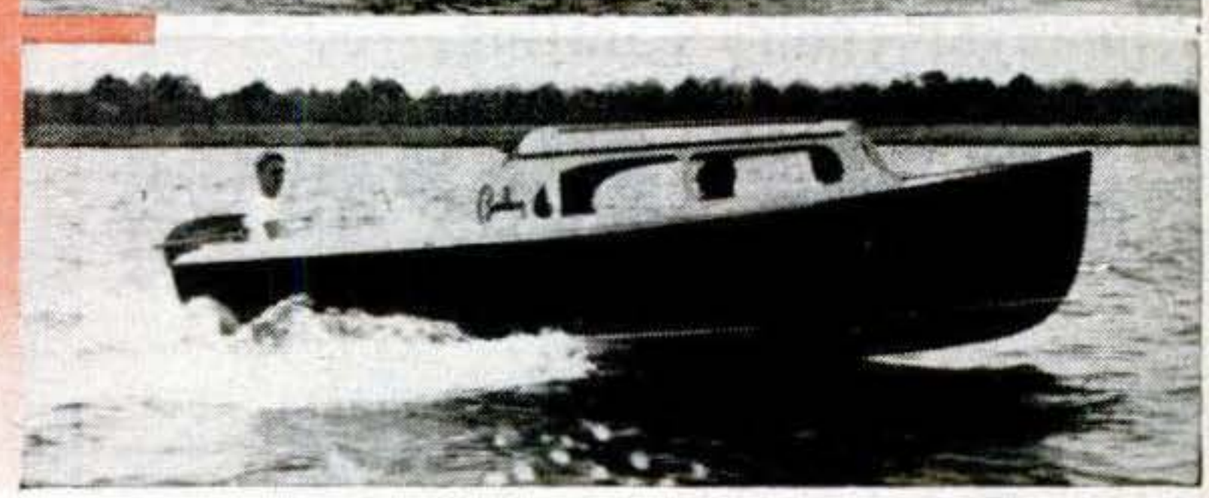
Copyrighted material

choose the motor that powers America's finest Outboard Cruisers!

BIG TWIN *by* EVINRUDE







• This is the motor that's "made for" outboard cruisers . . . the motor that started the wave of cruiser building from coast to coast! Here's the one that delivers *real* power for the job . . . brawny, high-spirited power that puts a thrilling bonus of speed into comfortable cruisers like these. Here's *flexible* power, superbly smooth from "wide open" right down to a drifting troll. Here's *new handling ease* . . . Gearshift with Neutral, Forward, Reverse . . . and Roto-Matic speed control. Here's new perfection of *remote control* . . . for '53 the Big Twin is *engineered* for quick (30 seconds) application of remote controls . . . with Evinrude's new Simplex Remote Control available at low cost!

CATALOG FREE! Write for full-color catalog of the complete Evinrude line—3-to-25 H. P.—the right motor for every boat!

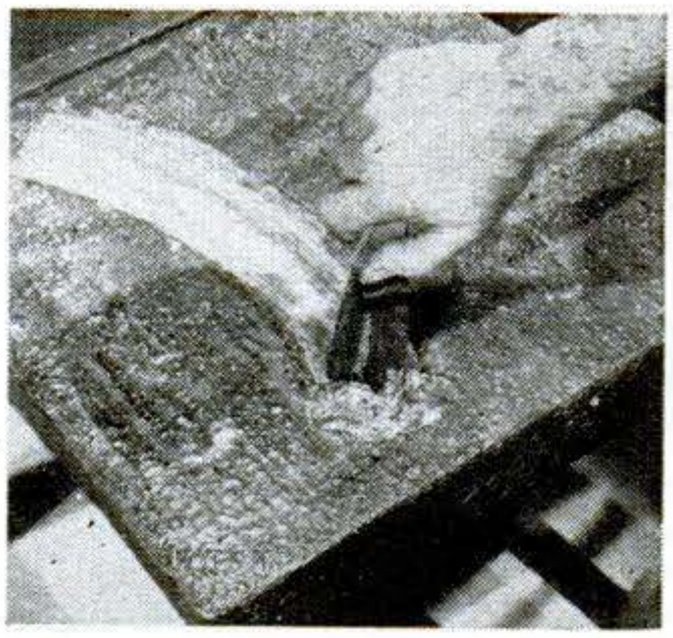
EVINRUDE MOTORS

4913 N. 27th St., Milwaukee 16, Wis.

In Canada: Manufactured by Evinrude Motors, Peterborough, Ont.

Copyrighted material

How to Get Smoother, Slicker Paint Jobs



Step 1. *Prepare surface.* Remove all chipped and peeling paint or varnish down to bare wood. You can do this easily and quickly with Strypeeze . . . the *guaranteed* paint remover that stays wet longer, clings to upright surfaces, doesn't harm hands.

Step 2. *Rebuild broken corners, fill nicks and holes.* A powder-form plastic putty, Savogran Wood Putty, is ideal for this. You can form it, tool it . . . and it doesn't shrink. For cracks in plaster, use Savogran Crack Filler. It's the original patented quick-hardening water putty.

Step 3. *Start job with clean brushes.* If it's an old brush, clean it before you begin painting. Clean all brushes after painting and whenever you change colors. Kwikeeze, the Liquid Brush Cleaner, softens *hard* brushes in minutes . . . cleans out fresh paint instantly! May be reused.

Whenever you're painting, you need

SAVOGRAN

REG. U. S. PAT. OFF.

PRODUCTS . . . at better paint & hardware stores

Write for free helpful literature

SAVOGRAN CO., Dept. 25, 25 Huntington Ave., Boston 16, Mass.

Does Anybody Live on Mars?

[*Continued from page 264*]

erful telescopes, stated that the lines "drawn with absolute geometrical precision" were actually only a series of spots which the observer, in a familiar optical illusion, tended to see as straight lines. And the anti-canalists claimed that the resolving power of Lowell's telescope was too low to have separated out double canals even if they existed.

French Astronomer Converted

Lowell's supporters were equally vigorous. Few were willing to go all the way with his interpretation of the streaks as Martian-made canals, but they did support his contention of single and double tracks thousands of miles long. So the argument has raged, with American astronomers tending to be pro-canal and Europeans anti-canal. The pro-canalists won an important victory when a leading anti-canalist, Gentili, working at the Pic du Midi Observatory in France, switched his position after the close approach of Mars in 1941. He stated flatly that he had seen the canals, that "certain canals were broad and diffuse, others extraordinarily narrow." In a rare piece of scientific crow eating, he assured the reader that "I had taken every precaution to prevent myself from being carried away and 'Lowellizing' my drawings."

What Palomar will tell us is anybody's guess, but many scientists believe that the canals are the last remnants of a great civilization which has long since perished. Because Mars was smaller, and farther from the sun, it has completed its life cycle and now rolls through space a dead planet, except for a few primitive species of vegetation. Some day, say these scientists, space travelers from the Earth may uncover the ruins of a Martian civilization that will make ours look puny. END

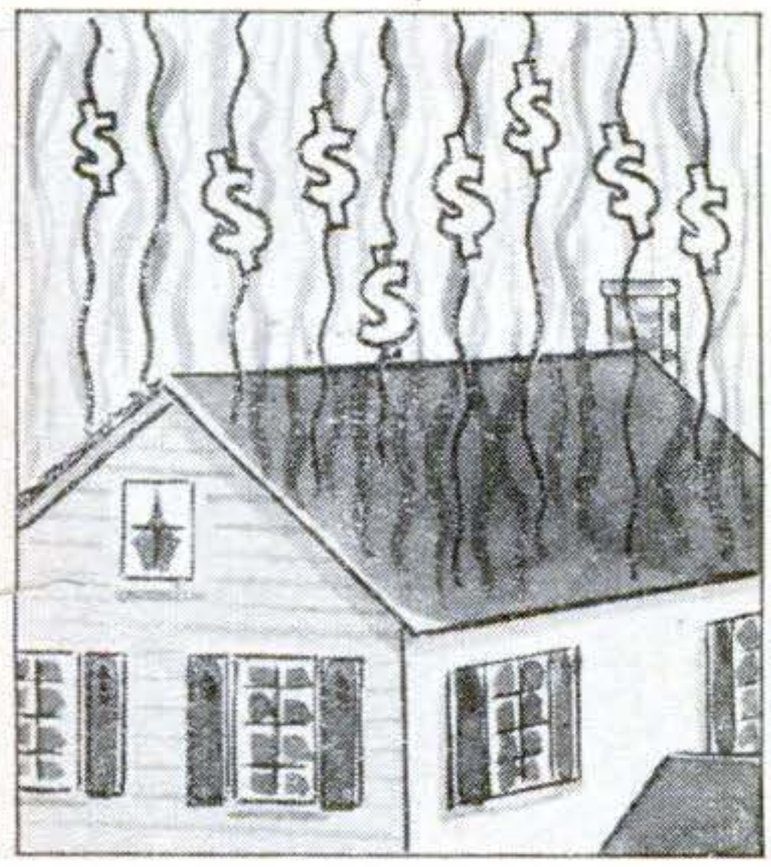
Speaking of Colds

A COLD is both affirmative and negative: sometimes the eyes have it and sometimes the nose.—*Pure Oil News.*

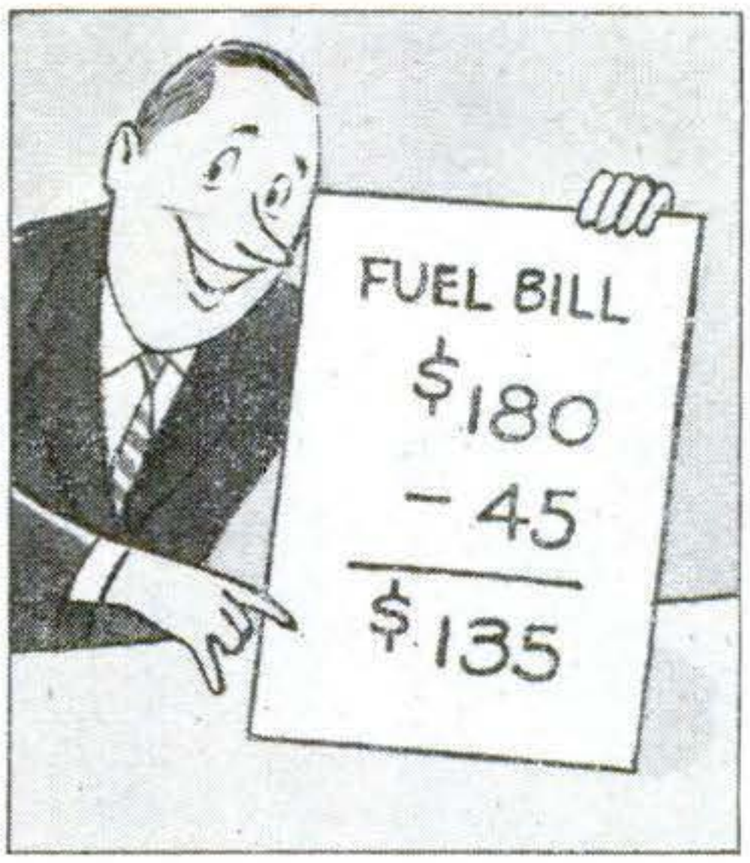
Copyrighted material

Let's insulate the attic next Saturday afternoon!

IT'S EASIER THAN YOU THINK—WITH GOLD BOND ROCK WOOL!



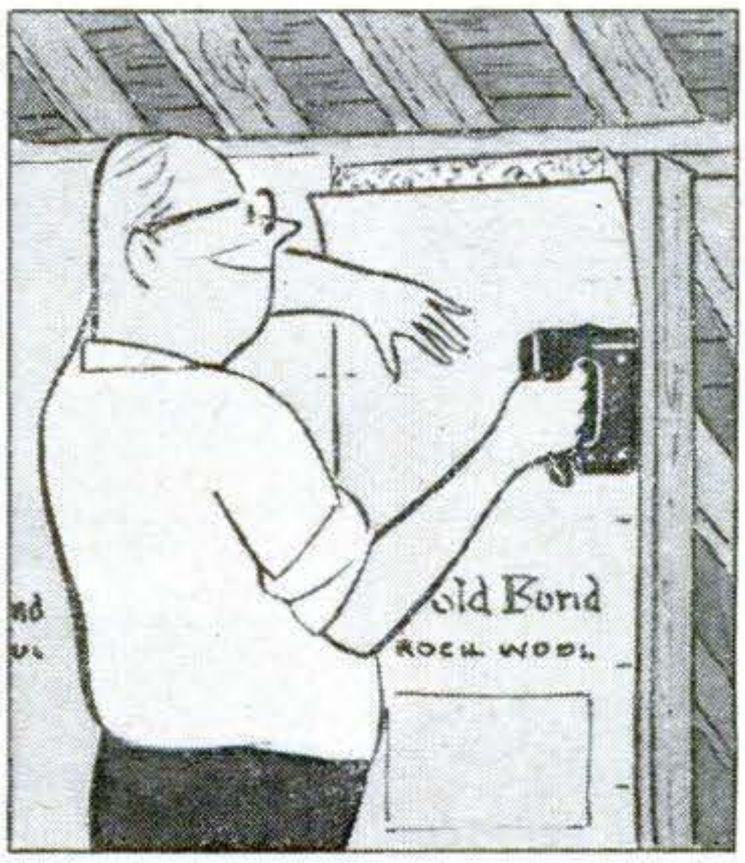
Why try to heat all outdoors? You can keep furnace heat in by putting fireproof Gold Bond Rock Wool in your attic. Cooler in summer, too.



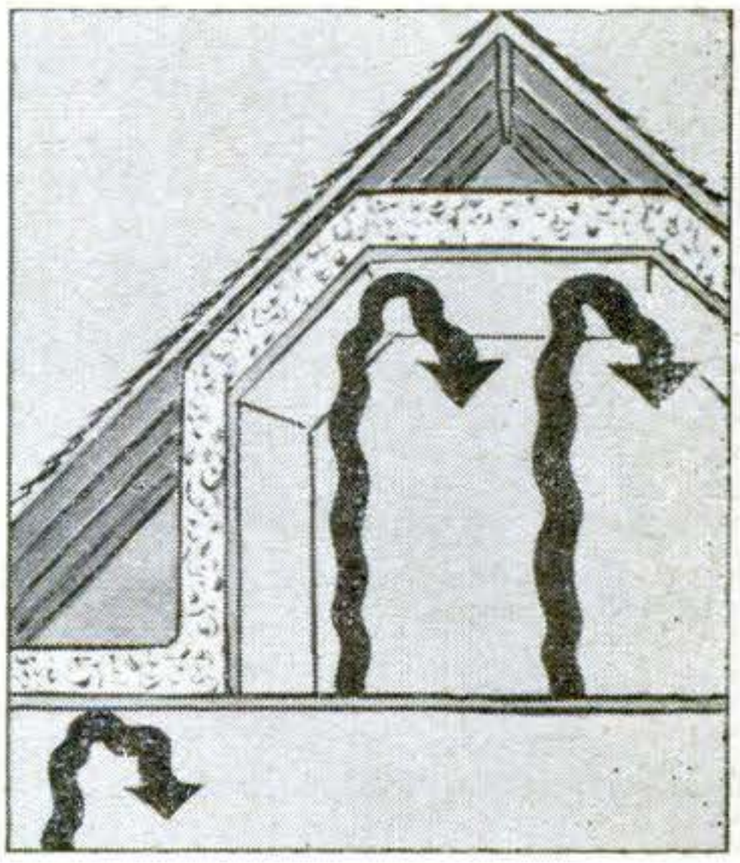
Actual tests show insulating the attic can cut fuel bills up to 25%. Savings soon pay the low cost of Gold Bond Rock Wool. All you "spend" is time!

See your Gold Bond lumber and building material dealer. He'll give you printed, easy-to-follow instructions... easy payment terms if you wish.

Start by laying Gold Bond Blankets between floor joists. Blankets come 15", 19" or 23" wide to fit most floors. Keep the "vapor barrier" face down.



If attic already has a floor, you nail or staple blankets to the kneewall and ceiling framing. Your Gold Bond dealer will furnish you a stapler.



Furnace heat stays in, summer heat stays out when Blankets are installed. Gold Bond Rock Wool sticks tight to blanket casing...won't slip or sag!

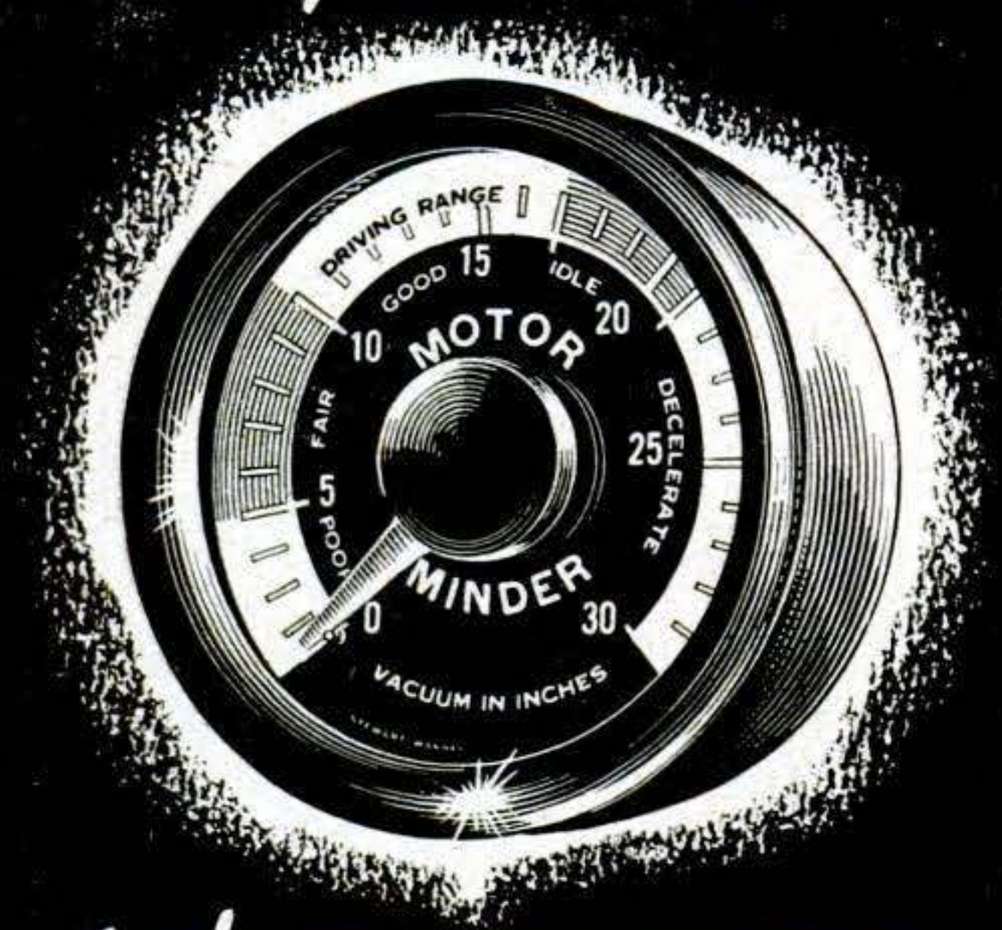
NATIONAL GYPSUM COMPANY • BUFFALO 2, N. Y.

Fireproof Wallboards, Decorative Insulation Boards, Lath, Plaster, Lime, Sheathing, Masonry Paints, Wall Paints, Textures, Rock Wool Insulation, Metal Lath and Sound Control Products.

ADD-A-ROOM NOW! with Gold Bond

Copyrighted material

NOW! SAVE GAS, CUT REPAIRS *as you drive!*



New STEWART-WARNER "Custom" MOTOR® MINDER

Gives Constant Check on Engine Performance

A quick look at its illuminated dial shows the way to peak motor performance. Lets you see at a glance how to get most miles per gallon—warns of engine trouble, of sub-standard performance by spark plugs, carburetor, valves, timing, rings, manifold and muffler, etc.

"Custom" model Motor Minder is easily, quickly installed in any car or truck. Swivel mounting for all angle vision. No extra parts needed. Complete instructions for installation and use included.

Motor Minder gives a constant visual check on *all* car motors—even latest high-compression models. Exceedingly accurate. Only $10.95. Install *your* Stewart-Warner "Custom" Motor Minder—today!

Ask for it at your Dealer's—only **$10.95** ***Or Write:***

STEWART-WARNER

Instrument Division, Department P-23
1840 Diversey Parkway, Chicago 14, Illinois

WHY PAY MORE *for an* ELECTRIC SHAVER?

WHISK AWAY EVEN A 7 DAY BEARD WITH THE WHISKER ELECTRIC SHAVER

Precision-built, with .002" thin blade that shaves all beards smoothly, closely.

Whether you shave once a day, or once a week you'll like WhiskER Electric Shaver. Its clipper-like blade is designed for all beards, is definitely less irritating. 110v AC model; no TV or radio interference. See your barber or dealer. If he cannot supply you, send $15.95—we pay postage; or send $2, you pay balance plus postage and COD. 10-day money-back guarantee.

CADET ELECTRIC HAIR CLIPPER
Cuts hair, removes superfluous hair from legs and under arms. The same fine quality clipper used and sold in many beauty shops. See your shop, or dealer. If you prefer, send $10.95—we pay postage; or $2, you pay postman balance, postage and C.O.D.

ELECTRO TOOL CORP., Dept. W533-B, Racine, Wis.

JOIN THE FUN—SAVE 50%

PACKAGED BOAT KITS

EASY TO ASSEMBLE

OUTBOARD CRUISERS from $349.50

SEA-GOING SERIES from $168.50

OUTBOARD RACERS from $119.95

▶ World's finest, most complete line of real performance boat kits! 27 exciting new models: Dinghies, Skiffs, Pontoon Racers, sleek Runabouts, roomy Outboards, Cruisers. Tops in design, styling, construction. Exclusive features for easier, more rapid assembly. Philippine Mahogany pre-assembled frames, brass screws. Easy to follow instructions.

▶ SEND 25¢ FOR 28 PAGE CATALOG. All 27 models fully illustrated including specifications, performance data plus complete line of marine hardware and paints.

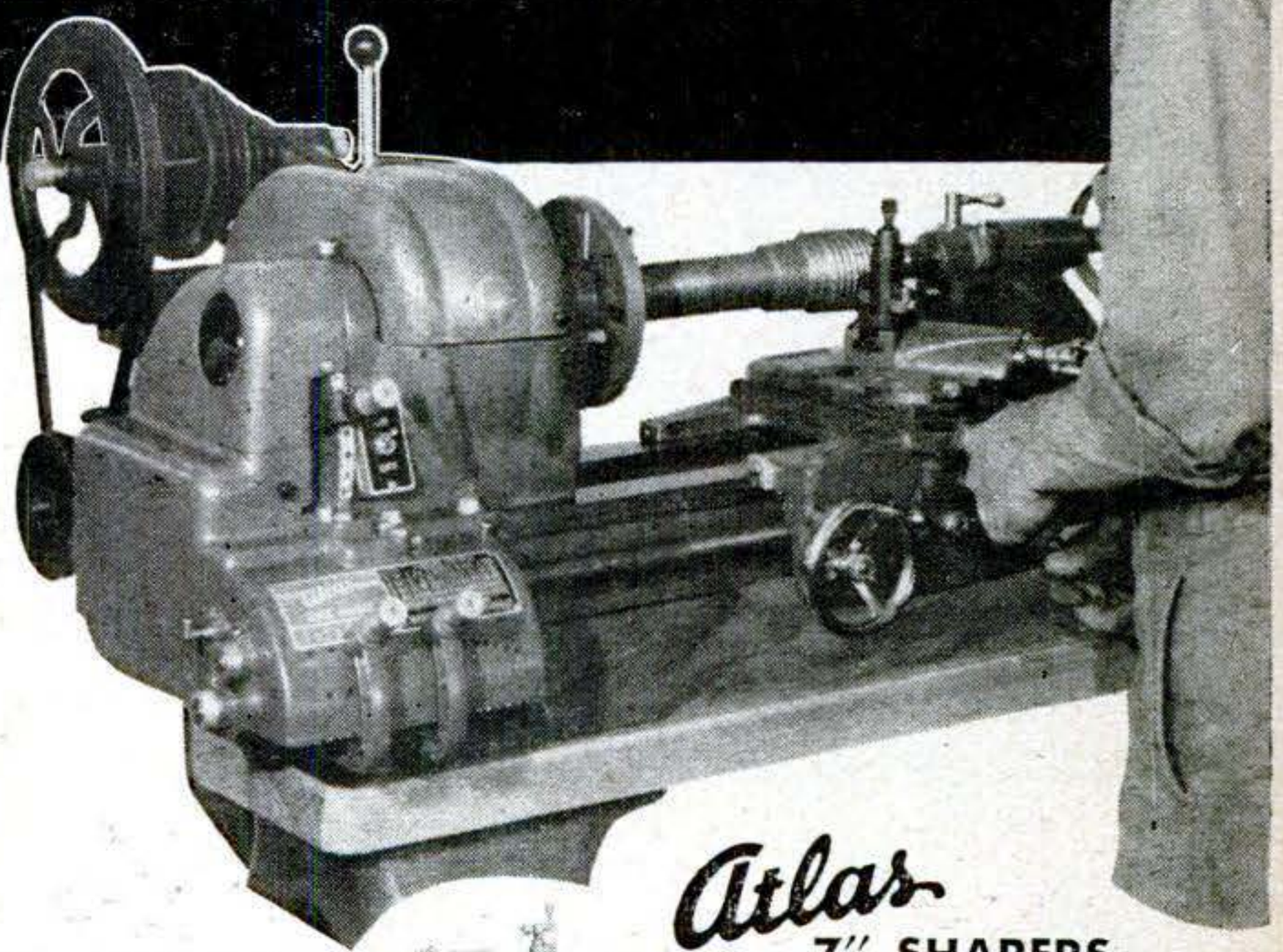
BOAT PLANS AND FULL-SIZE PATTERNS

Over 100 Modern plans and full size patterns. Racing classes, cruisers, inboards, outboards, sail boats. By famous designers. 6' to 30'. DESIGN CATALOG only 35¢. For Design Catalog plus boat building handbook send $1.00.

CUSTOM-CRAFT (DEPT. B) BUFFALO 7, N. Y.

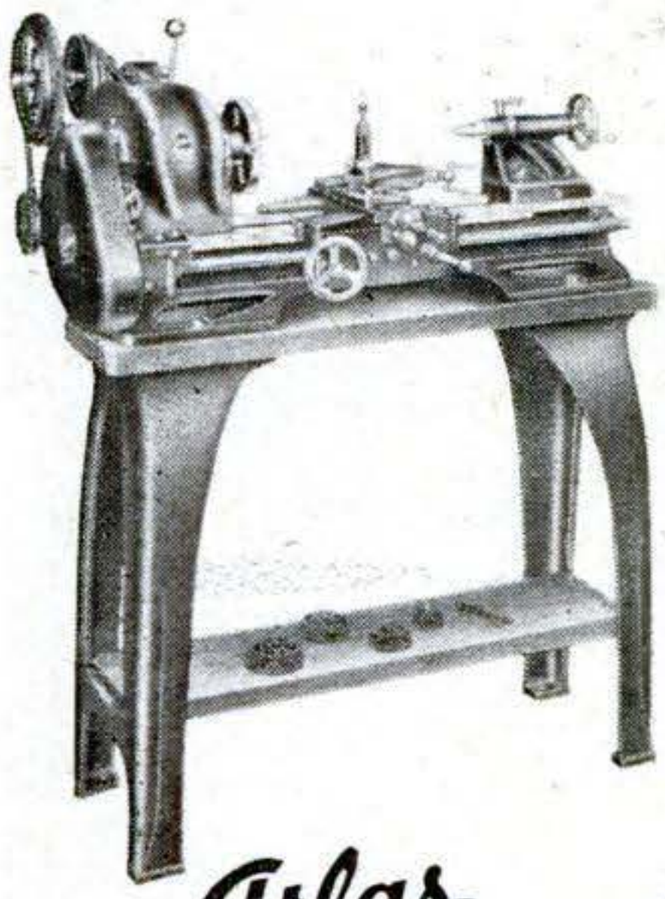
Copyrighted material

Atlas GREATEST VALUES IN METALWORKING TOOLS



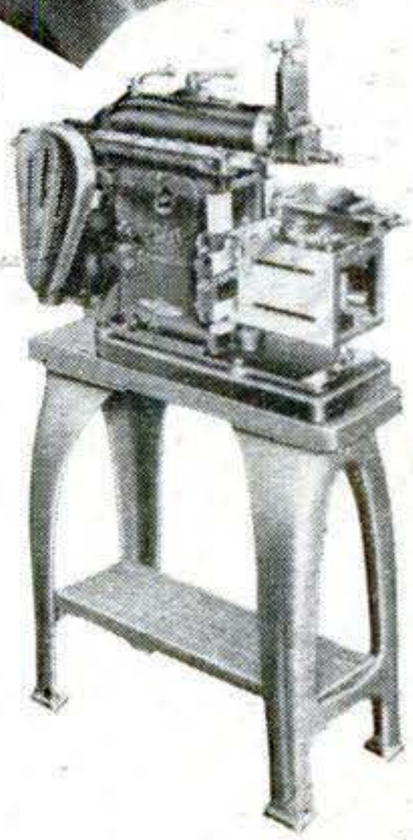
look them over — see for yourself!

Lower cost . . . easier operation . . . better bearings for longer service — by *every* comparison Atlas metalworking tools give you more for your money! See for yourself — compare. Visit your Atlas dealer, or send for latest catalog. The low prices will surprise you!



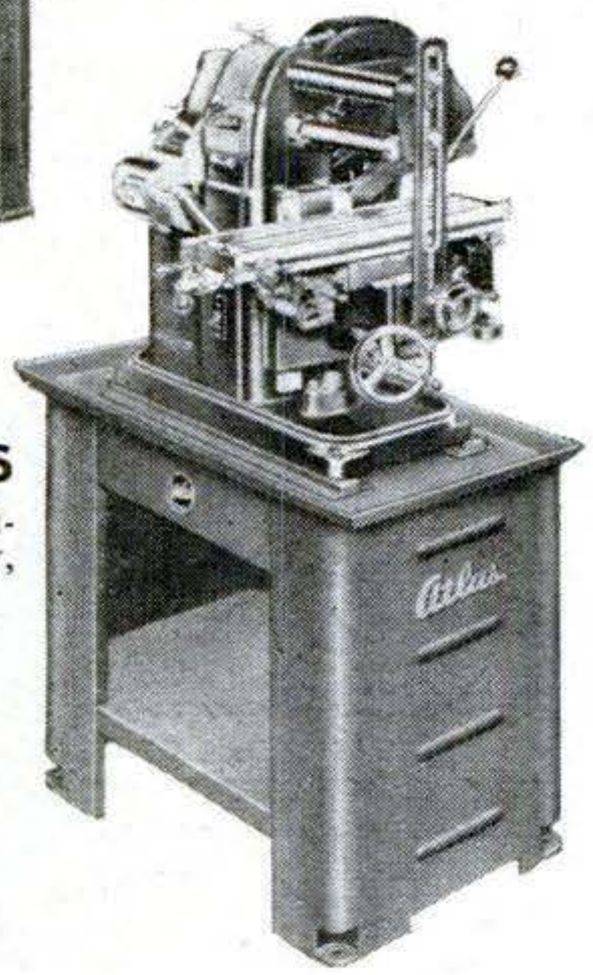
Atlas 6″ - 10″ LATHES

The only 10″ lathes with Timken bearings! 16 speeds, instantly reversible power cross and longitudinal feeds, plus many other features. Precision 6″ lathes also Timken bearing equipped!



Atlas 7″ SHAPERS

Handles all shaping within a 7″ stroke. The only 7″ shaper with Timken bearings, outside length of stroke adjustment, cast iron bull gear with 1″ face.

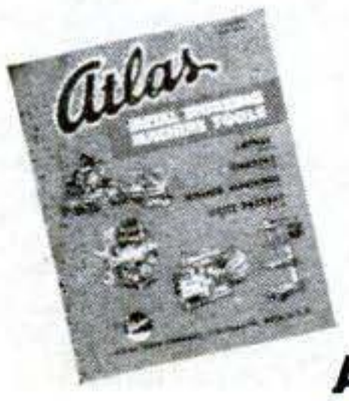


Atlas MILLING MACHINES

Performs the full range of milling operations . . . accurately, efficiently, and at low cost.

Atlas DRILL PRESSES

15″ bench and floor drills — and 12¾″ bench models — with "floating drive" and many exclusive features for greater accuracy, longer service life.



ATLAS PRESS COMPANY
225 N. PITCHER ST. • KALAMAZOO, MICHIGAN

Atlas DEPENDABLE QUALITY TOOLS SINCE 1911

SEND FOR FREE CATALOG

I am interested in the following tools:

- ☐ 10″ LATHE
- ☐ 6″ LATHE
- ☐ DRILL PRESS
- ☐ MILLER
- ☐ SHAPER
- ☐ WOODWORKING TOOLS

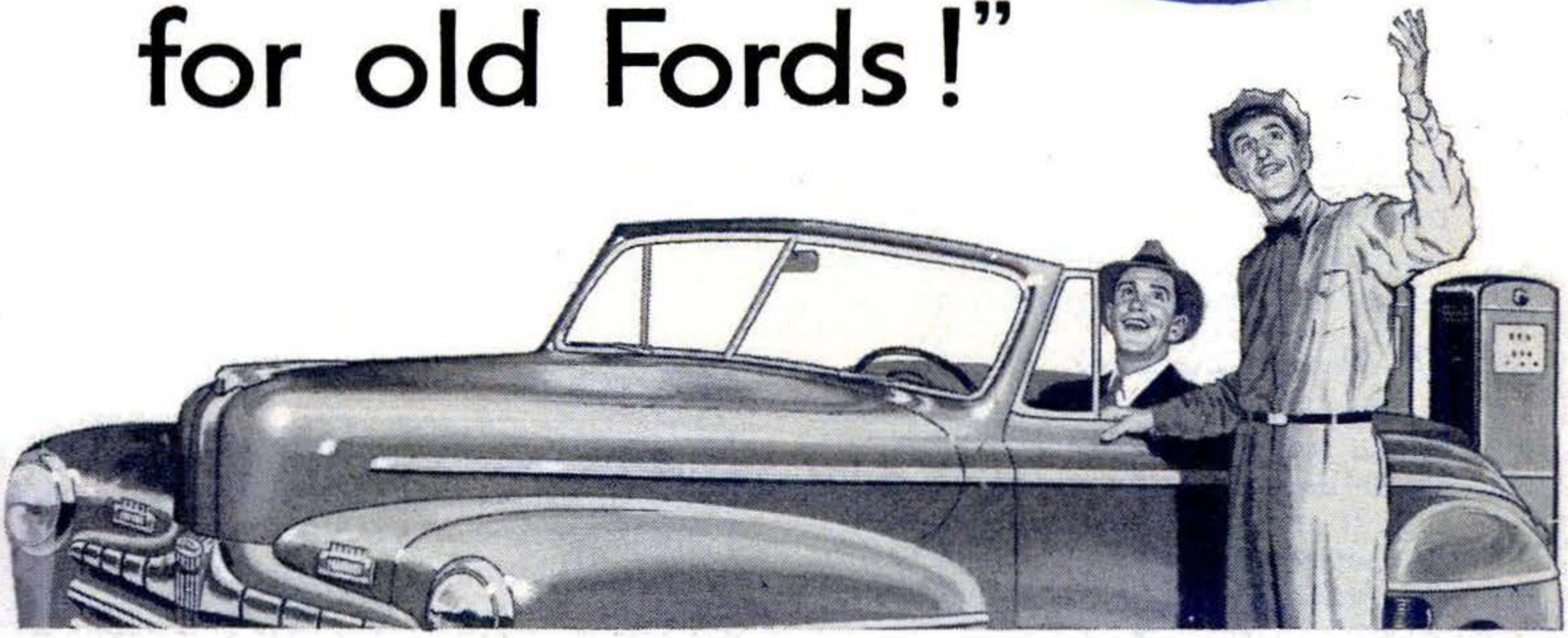
NAME _____

ADDRESS _____

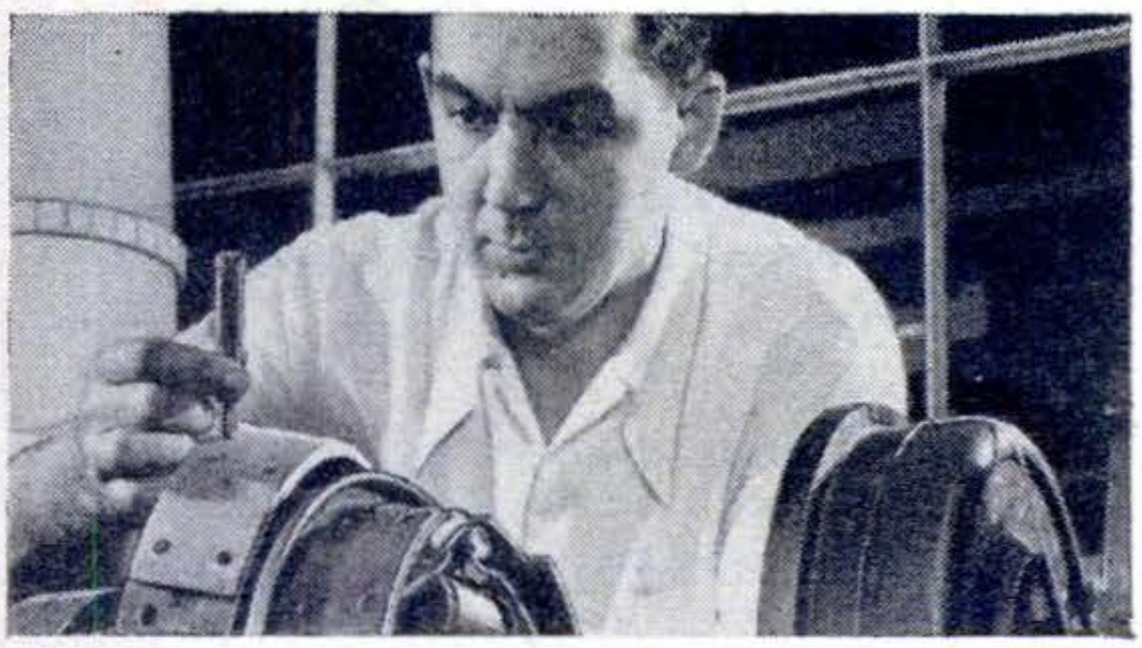
CITY, STATE _____

Copyrighted material

"They're a new lease on life for old Fords!"



Genuine Ford Parts are just naturally the best parts you can put into your Ford. Here's why:



They're made right to fit right by the men who made your Ford . . . often on the same production lines as the parts now in your Ford. That's why they're easy to install, and that's one reason they save your time, your money, and your Ford. In addition . . .

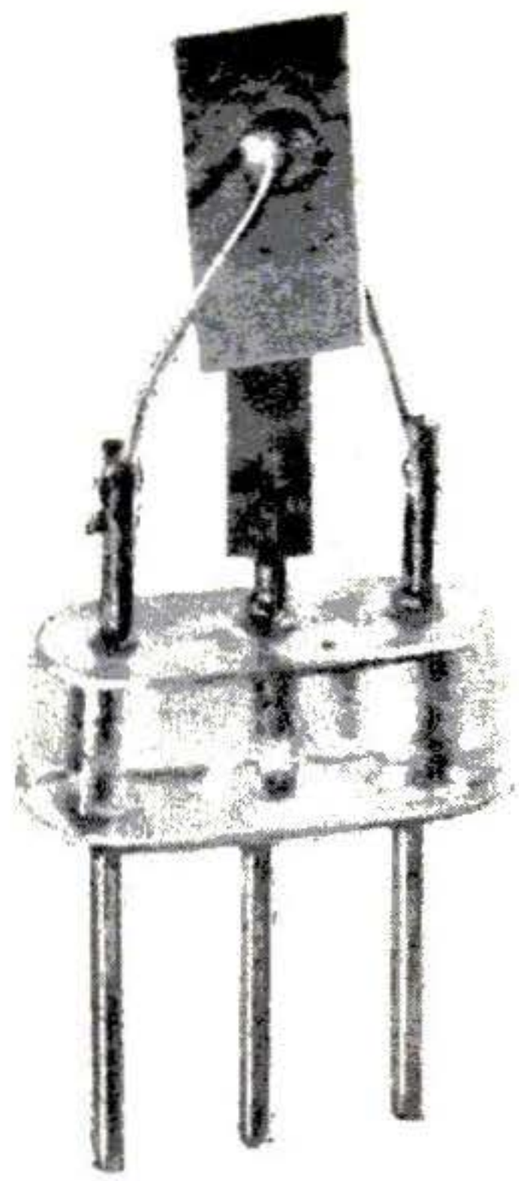
They're Track Tested and proved by Ford engineers who give them the toughest imaginable tests. When they meet Ford's high standards, they become Genuine Ford Parts and you can be sure they're built to last and *last!*

They're easy to get!
They're available at all Ford Dealers and the selected independent garages where you see this sign.

Insist on the parts that keep your Ford All Ford

Copyrighted material

transistor—
mighty mite of electronics



Because of growing public interest in transistors, RCA—a pioneer in their development for practical use in electronics—answers some basic questions:

Q: ***What is a transistor?***

A: The transistor consists of a small particle of the metal germanium imbedded in a plastic shell about the size of a kernel of corn. It controls electrons in solids in much the same way that the electron tube handles electrons in a vacuum. But transistors are not interchangeable with tubes in the sense that a tube can be removed from a radio or television set and a transistor substituted. New circuits as well as new components are needed.

Q: ***What is germanium?***

A: Germanium is a metal midway between gold and platinum in cost, but a penny or two will buy the amount needed for one transistor. Germanium is one of the basic elements found in coal and certain ores. When painstakingly prepared, it has unusual electrical characteristics which enable a transistor to detect, amplify and oscillate as does an electron tube.

Q: ***What are the advantages of transistors?***

A: They have no heated filament, require no warm-up, and use little power. They are rugged, shock-resistant and unaffected by dampness. They have long life. These qualities offer great opportunities for the miniaturization, simplification, and refinement of many types of electronic equipment.

Q: ***What is the present status of transistors?***

A: There are a number of types, most still in the development stage. RCA has demonstrated to 200 electronics firms—plus Armed Forces representatives—how transistors could be used in many different applications.

Q: ***How widely will the transistor be used in the future?***

A: To indicate future applications, RCA scientists have demonstrated *experimental* transistorized amplifiers, phonographs, radio receivers (AM, FM, and automobile), tiny transmitters, electronic computers and a number of television circuits. Because of its physical characteristics, the transistor qualifies superbly for use in lightweight, portable instruments.

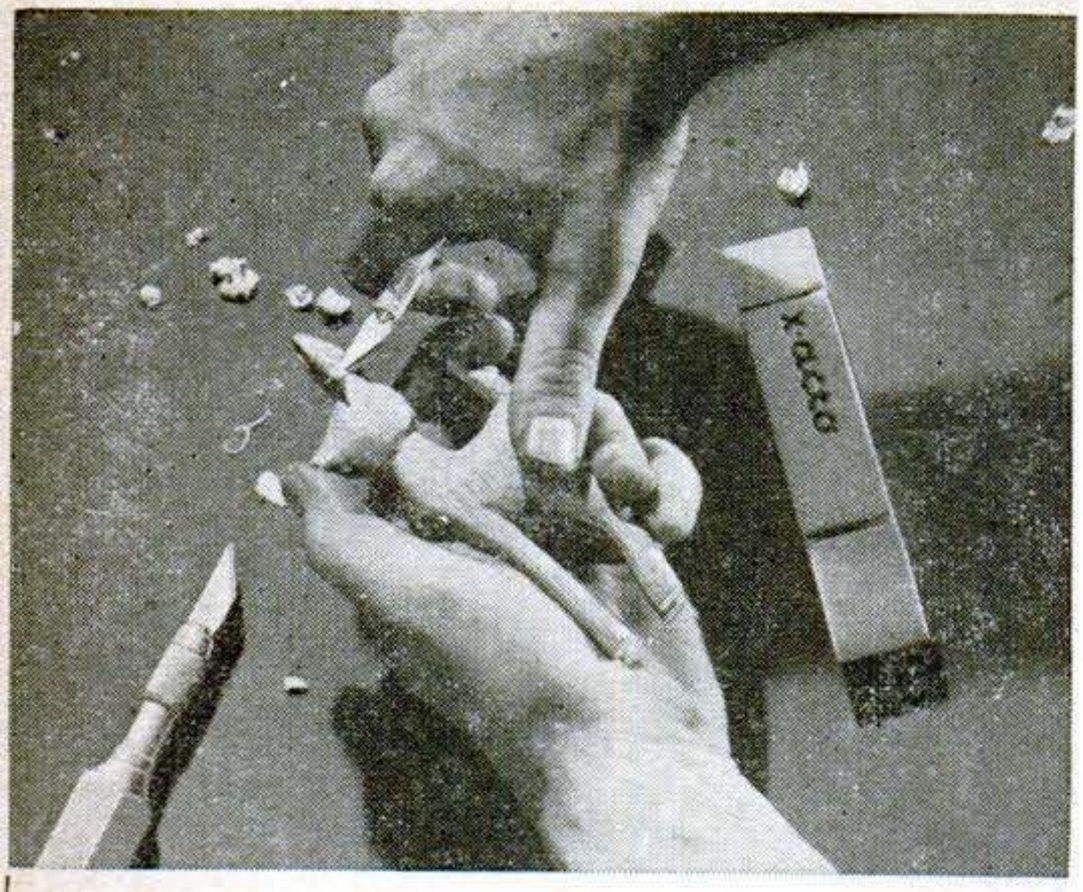
* * *

RCA scientists, research men and engineers, aided by increased laboratory facilities, have intensified their work in the field of transistors. The multiplicity of new applications in both military and commercial fields is being studied. Already the transistor gives evidence that it will greatly extend the base of the electronics art into many new fields of science, commerce and industry. Such pioneering assures finer performance from any product or service trade-marked RCA and RCA Victor.

RCA®

RADIO CORPORATION OF AMERICA

World leader in radio—first in television



make your *HANDS MORE CREATIVE* with x-acto Knives and Tools

Creative hands can be your greatest asset . . . X-acto knives and tools help the intelligent coordination of active minds and agile fingers . . . they can develop skill and dexterity in any art or handicraft you select.

Whether it's boat whittling, model airplanes, wood-carving, leathercraft, model railroads or any other handicraft, you can make *your* hands *more* creative with "designed-for-the-job" precision-engineered X-acto knives, tools and handicraft kits.

X-acto offers *the* complete line of handicraft knives, interchangeable blades, tools and attractive kits.

From 25¢ to $30.—at dealers everywhere.

No. 82
X-ACTO KNIFE CHEST
$4.20

x-acto ®

Send 15¢ to cover postage for our new illustrated 28-page Catalog.

X-acto Crescent Products Co., Inc.
440 Fourth Avenue, New York 16, New York

4 TOOLS IN 1

The Complete METAL WORK SHOP FOR HOME AND PLANT

Patent No. 2053309

IT FORMS SHEARS PUNCHES RIVETS

INTRODUCTORY PRICE Only $6.95 DELIVERED

BENCH TOOL that FORMS, SHEARS, PUNCHES, RIVETS—one small compact tool that is a complete metal workshop. Bending and forming dies make smooth sharp bends in either bar or rod stock. Hardened steel shearing jaws shears metals cleanly up to 1/4" thickness. An efficient punch press complete with 1/8", 3/16" and 1/4" punches. Rivets easily with punch press and rivet dies. Check must accompany order. No C.O.D.'s. Full immediate refund if not completely satisfied.

TATU CO.
Dept. G5, 85 Columbia Dr., Williamsville 21, N. Y.

Thousands In Use

SMALL! POWERFUL!

America's finest low cost tractor. Ruggedly built. Easy to operate. No belts, no chains. Borg-Warner clutch, trans. and diff. 140 to 1 reduction. 40% more drawbar pull than ordinary tractors. 8-1/4 H.P. engine--gasoline or kerosene. 20 quick change implements. Write for complete details.

ECONOMY TRACTOR

ENGINEERING PRODUCTS CO.
915-A2 NIAGARA CT., WAUKESHA, WIS.

Send for this Giant Automotive Catalog

& Save to 50% on All Parts & Accessories

1953 EDITION JUST OUT!

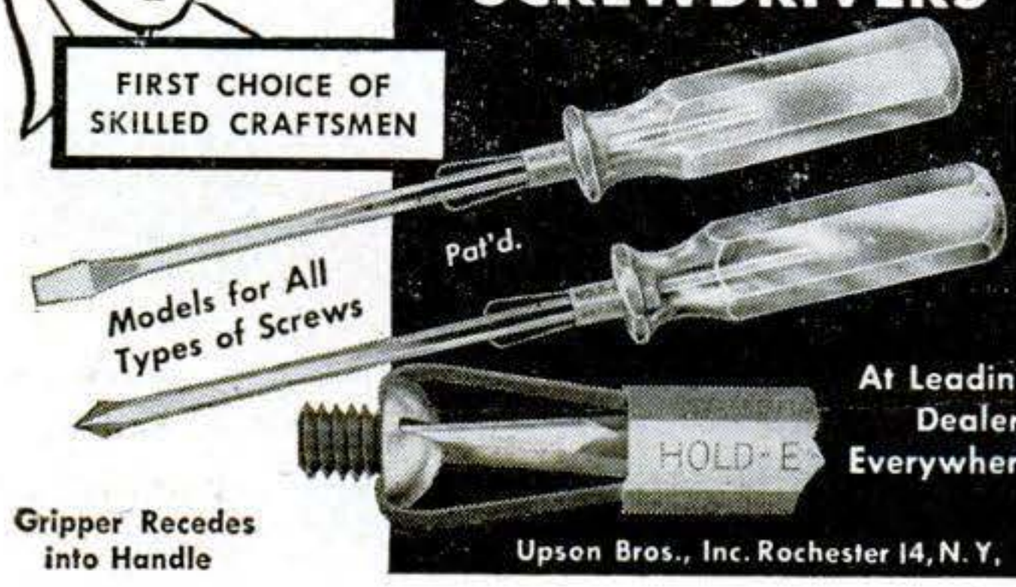
World's largest Auto Accessory & Parts Catalog. Over 50,000 items:—Hollywood Accessories, Hi-Speed Equipment, Rebuilt Engines, Everything for all cars & trucks. We have that Hard-To-Get part. Jam packed with bargains. Completely illustrated. (126 Pages) Send 25c (Refundable).

J. C. WHITNEY & CO. 1917-F Archer, Chicago 16

HOLD-E-ZEE

THE ORIGINAL *AUTOMATIC GRIP* SCREWDRIVERS

FIRST CHOICE OF SKILLED CRAFTSMEN



Models for All Types of Screws

At Leading Dealers Everywhere

Gripper Recedes into Handle

Upson Bros., Inc. Rochester 14, N. Y.

Copyrighted material

New...SHOPMASTER

PRESENTS THE SENSATIONAL

Universal

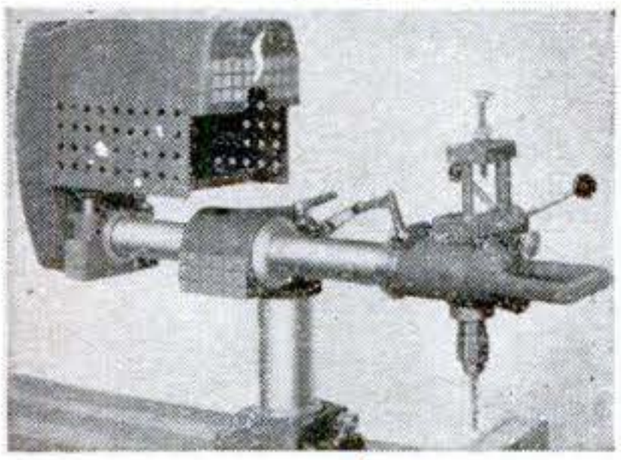
INDIVIDUAL COMBINATION

Power Tool

Patents Pending

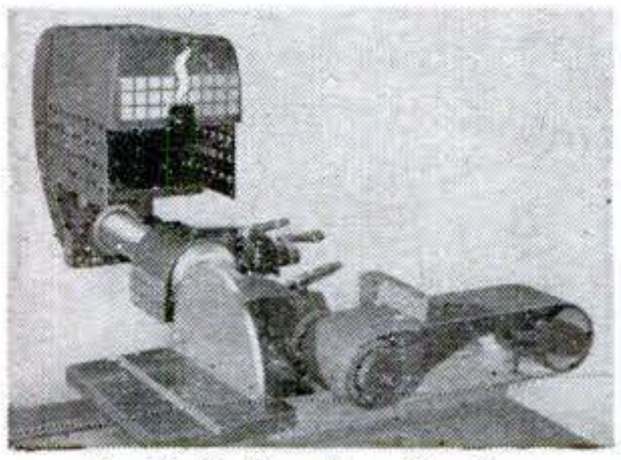
As Ball Bearing Circle Saw

Mitres, compound mitres, cross-cuts, dados, rips, cups, grooves. 8" blade, 2 9/16" cut.



As Ball Bearing Drill Press

3" stroke, 18" throat. Drill, rout or mortise at any angle, in 36" circle.



As Ball Bearing Sander

Either belt or disc locks in vertical or horizontal position, or at any angle.

It's a Circle Saw, Drill Press, Sander, Router, Shaper, Lathe

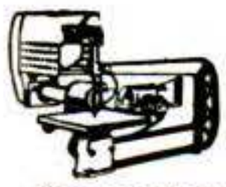
All in one

The most versatile and useful all-purpose woodworking power tool ever developed . . . a complete workshop in itself! Easy to convert . . . It's light, flexible and simple to operate, yet precision-built to finest professional quality.

All Moving Parts Glide on Ball Bearings

Moving parts glide smoothly, effortlessly on friction-free ball bearings. Easy-to-read calibrations permit quick, precise setting. Locks in any position. Beautifully finished with chrome-plated column crank, lock handles and shaft caps.

V-Belt drive, 4 speeds

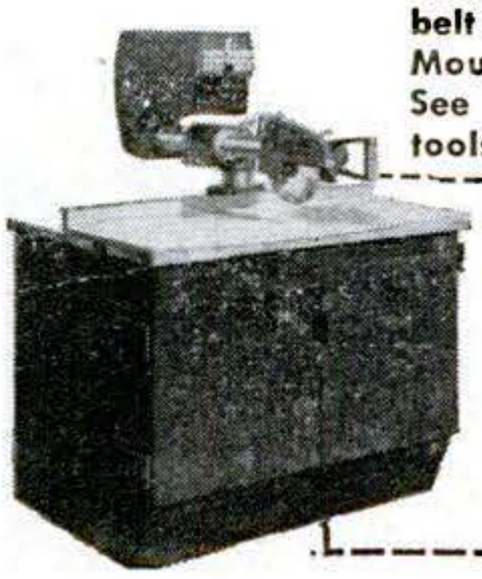


Powers other tools

Tools changed in seconds.

Complete with saw, drill, disc and belt sander, and safety type chuck. Mounts on special table . . . . . See other famous individual Shopmaster tools. Other tool accessories available.

$249.95 plus motor



Shopmaster, Inc., Dept. PS-2
1214 Third Street South, Minneapolis, Minnesota
Send information on new Shopmaster Universal Power Tool TODAY!

Name.....

Address.....

City..... State.....

Copyrighted material

Refinish

without drudgery or danger

IT'S FAST! IT'S CLEAN! Sold at leading paint, hardware and department stores.

Product of
THE KLEAN-STRIP Co., Inc.
2340 S. Lauderdale • Memphis 6, Tenn.

The new "Evans White-Tape" has everything you'll find in tapes costing over $1.50—plus.

- snow-white blade with bold, legible, jet-black numerals and graduations. Graduated in 32nds for first 6 inches.
- sturdy die-cast case heavily chrome-plated, calibrated for quick reading inside and outside measurements.
- blade ½" wide made of finest high carbon steel—tempered—Bonderized—enamelled—baked.
- blade replaceable in seconds—without tools—without even opening case. And Evans replacement blades cost far less.
- every "Evans White-Tape" is unconditionally guaranteed.
- exclusive Evans automatic brake gives smoother push-pull action with absolutely no "creeping" of tape into case.
- underside is white, too. Mark with ordinary pencil, remove mark with flick of thumb.
- unheard-of low price*: 10-ft. $1.49; 8-ft. $1.19; 6-ft. 98¢. Prices higher in far west and Canada.

Sold only through retailers.

Evans & CO Elizabeth, N. J., Montreal, Que. ® 7429

Makers of Evans 6-ft. Folding Rule and "Folding Yardstick"

Chevrolet Gets Power Steering

[*Continued from page 105*]

valve and a governor. Now, with the selector lever in Drive range, the car automatically shifts into low gear at low speed or a stop. On acceleration, the governor, spun by the transmission main shaft, keeps trying to up-shift the gears. The throttle valve, responding to intake-manifold pressure, keeps trying to prevent the up shift. The manifold pressure drops as acceleration levels off. At that point the governor wins and the car goes into high.

More Zip at Low Speeds

Like the change in the Buick transmission (p. 159), this gives the Chevrolet a snap it was lacking. Like the Ford, the car now up-shifts and down-shifts by itself. But while the Chevrolet and the Ford use the same mechanical-hydraulic principle, there's a marked difference in application.

Chevrolet's assisting gears give you oomph at the rear wheels for city driving. Ford's assisting gears are designed for a better take-off when the light changes, too, but Ford's down shift when you put the pedal on the floorboard is called a "passing gear." It's intended for cutting out and around on the open highway.

The Chevrolet's refurbished transmission starts you out in low gear, Ford's in intermediate. The Chevvy up-shifts at anywhere from 10 to 40 miles an hour, depending on how much accelerator pressure you exert. The Ford up-shifts from 18 to 58. With the throttle closed, the Chevvy down-shifts automatically at 10½ m.p.h., the Ford at 12.

Less Gas Is Used

In Drive range, you can't hold the Chevvy in low gear beyond 40 and you can't hold the Ford in intermediate beyond 58. Both cars, of course, have an emergency-low setting on the selector quadrant.

It is by deliberate choice that Chevrolet uses low gear for take-off. Its engineers reasoned that the torque con-

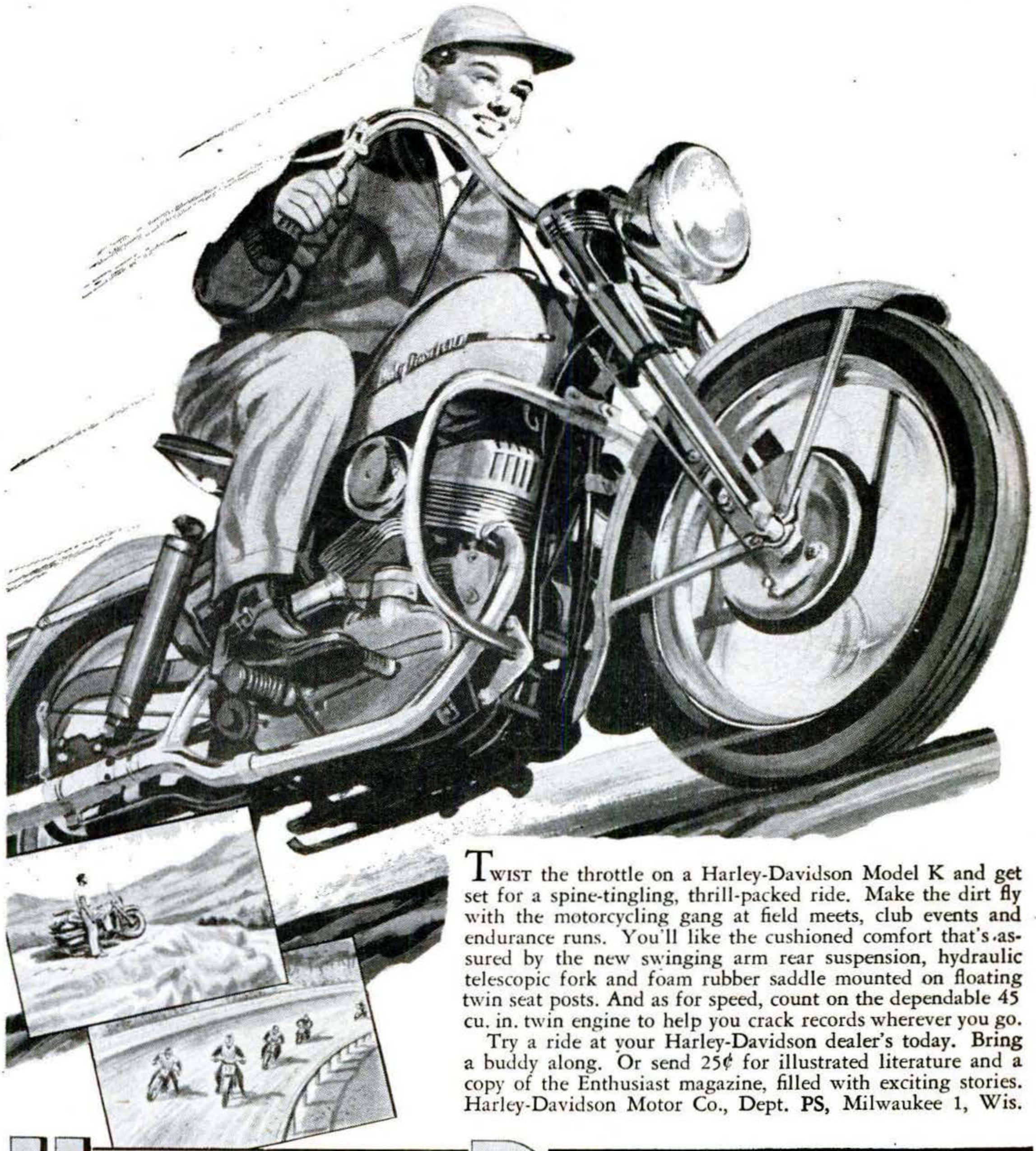
[*Continued on page 304*]

Copyrighted material

Ride this great new

MODEL K

for amazing speed, breathtaking thrills, sensational fun and excitement!



TWIST the throttle on a Harley-Davidson Model K and get set for a spine-tingling, thrill-packed ride. Make the dirt fly with the motorcycling gang at field meets, club events and endurance runs. You'll like the cushioned comfort that's assured by the new swinging arm rear suspension, hydraulic telescopic fork and foam rubber saddle mounted on floating twin seat posts. And as for speed, count on the dependable 45 cu. in. twin engine to help you crack records wherever you go.

Try a ride at your Harley-Davidson dealer's today. Bring a buddy along. Or send 25¢ for illustrated literature and a copy of the Enthusiast magazine, filled with exciting stories. Harley-Davidson Motor Co., Dept. PS, Milwaukee 1, Wis.

HARLEY-DAVIDSON

MODEL K

Copyrighted material

BUILD YOUR OWN TILTING ARBOR SAW!

SAVE $50 OR MORE

Exclusive GIL-BILT Build-It-Yourself Features

- No machining—build easily with hand tools only
- No blueprint reading—step-by-step pictorial plans, full scale patterns, actual photographs
- Sturdy wood, aluminum, and steel construction
- Capacity and performance of commercial saws selling for $60 and up

GIL-BILT 10-INCH TILTING ARBOR SAW

- 27x28 in. table, 13½ in. capacity in front of blade
- 10 in. blade cuts 3¼ in. deep, tilts full 45 degrees
- Floor model 34" high, table always stays level
- New Departure ball bearing arbor, ¾" precision shaft turned down for ⅝" bore blades, alum. housing, shipped ready to run
- Jackscrew and 4½ in. dia. handwheel lowers and raises blade
- Cast aluminum miter gauge and self-aligning rip fence guide

GIL-BILT Metal Parts Kit includes Plans, ball bearing arbor, miter gauge and bar, rip fence guide, dado insert, lock knobs, jack screw mechanism and handwheel, and all other metal parts (less blade).....$21.95
Same Kit with 10" Combination Blade....$24.90
Same Kit with 8" Combination Blade....$23.90

GIL-BILT 8-INCH TILTING TABLE SAW

- 21x27 in. table tilts full 45 degrees, 13 in. capacity in front of blade
- 8 in. blade cuts from 0 to 2½ inches
- New Departure ball bearing arbor, ⅝" precision shaft turned down for ½" bore blades, alum. housing, ready to run
- Cast aluminum miter gauge and self-align. rip fence guide (same as above)

GIL-BILT Metal Parts Kit includes Plans, Ball Bearing Arbor, Miter Gauge and Bar, Rip Fence Guide, Machined Lock Knobs, Tilt Support Segments and All Other Metal Parts (less blade) $15.95
Same Kit with 8" Combination Blade.....$18.90

GIL-BILT 12-INCH BAND SAW

- Cuts to center of 24 inch circle
- Handles stock up to 6 inch thick
- 18x18 inch table tilts 45 degrees
- Lower wheel and drive pulley runs on sealed New Departure Ball Bearings; Upper wheel runs on two ⅝" bore Oilite Bronze bearings.
  - Upper wheel tension and tilt mechanism of cast aluminum, completely assembled.
  - Upper and lower blade guides. Each has ball thrust bearing, self-lub bronze jaws
  - Rigid cast aluminum wheels fully machined ready-to-install. Heavy rubber tires.
  - Uses standard 78 inch blades up to ⅜ in. wide.
  - Fully enclosed mechanism for utmost safety.

GIL-BILT Metal Parts Kit includes Plans, rubber tires, aluminum wheels, ¼ in. blade, ball bearing spindle, tilt mechanism, blade guides, table tilt segments, and all other metal parts.....$21.95

GIL-BILT BELT SANDER

- 84 sq. in. sanding surface. Over 4 times the effective area of a 10 in. disc sander.
- Belt operates in either vertical or horizontal position, does all sanding operations.
- Driver drum and pulley turn on sealed New Departure ball bearings; tension drum turns on Chrysler Oilite bronze bearings.
- Spindle and tension mechanisms of cast aluminum, completely machined and assembled.
- Belt travels 1800 ft. per min. Over a MILE of straight sanding action every three minutes. Saves more "elbow grease" than any other tool.

GIL-BILT Metal Parts Kit includes Plans, ball bearing spindle, 4 in. driver drum, 3 in. tension drum, tension mechanism, table tilt segments, rubber tires, cloth sanding belt, and all other metal parts **$16.95.**

NO DEALERS—ONE LOW FACTORY PRICE! Return in 10 days for refund of purchase price if not satisfied. Prices include postage within 300 miles. Over 300 miles add 5%. Send cash, check, or money order for parts kit, or send $1.00 for Step-by-Step Plans and order kit later less cost of plans. Plans sent postpaid anywhere in the world.

COMPLETE PLANS *only* $1.00 EACH

GILLIOM POWER TOOLS
P.O. Box 1-VB, Lambert Field, St. Louis 21, Missouri

FREE

How to repair broken windows

Repair broken windows yourself. Learn how. Free Picture book tells all. Write for Free copy while limited printing lasts.

MAIL THIS HANDY COUPON RIGHT AWAY

Red Devil Tools, Irvington 11, N. J.
Please send Free copy of Booklet HT-232
NAME_____
ADDRESS_____
CITY_____ STATE_____

Copr. 1952 R. D., Inc.

STOP THAT OIL BURNER!

GET THAT "NEW CAR" PERFORMANCE WITH

Ring-Re-Nu

TRADE-MARK

MOTOR RECONDITIONER KIT

No need for costly overhauling. Simply pour P.V.R. Compound in carburetor to clean engine; remove gum, tar and varnish. Then squeeze RING-RE-NU in cylinders . . . forms a pliable, lubricating seal around worn rings. Restores power and compression, eliminates oil burning and piston slap. Good for 10,000 plus miles . . . applied in a few minutes. Order Genuine RING-RE-NU . . . not a foreign import. Made in America for American engineered engines. Guaranteed not to harm your engine.

1 tube kit — good for all makes of cars (except those listed below) only $4.95 POSTPAID

2 tube kit — for larger engines — Buick Roadmaster, Cadillac, Chrysler 8, La Salle, Lincoln, Packard 8, Olds 88 and 98 — $8.95 postpaid.

($1.00 deposit required on all C.O.D. orders)

10 DAY MONEY BACK GUARANTEE

Free descriptive folder available on request.

RICHIE DISTRIBUTING, INC.
11916 MADISON AVE., DEPT. B2
CLEVELAND 7, OHIO

Buy the Mechanic's FIRST Choice ...EMPIRE LEVELS For Home, Farm, all Trades

See Empire Levels at your dealer, or write for Catalog Pages of New Empire Levels.

Empire No. 151 Aluminum Level: Adjustable vial cases, twin levels, plumbs, 45° vials —24"—$7.50.

EMPIRE TOOLS

EMPIRE LEVEL MFG. COMPANY
10930 West Potter Rd., Dept. PS., Milwaukee 13, Wis.

MIDGET TRACTOR READY!

CONTRACTORS: load skip mixers, small trucks, level earth! **MUNICIPALITIES:** clear snow, back-fill parkway trenches, control weeds! **FOUNDRIES:** many uses! **FARMERS, ESTATES:** clean barn, till soil, plow snow, etc.

6 FOOT LIFT!

Also A

Powerful Bulldozer

Mead's "MIGHTY MOUSE" HI-LIFT Tractor-Dozer *pivots within its own length.* Weighs only 1300 lbs. yet dozes and hydraulically lifts a 5 cubic foot capacity bucket up to 6 feet! Machine only 40½" wide, 95" long. 2 speeds forward—1 reverse. 6 H.P. engine. M6-HI-LIFT'S size, maneuverability make it ideal for contractors, municipalities, railroads, farmers, estate owners—where larger units cannot work. Accessories such as dozer blade, mower, etc. available. Write for Free Circular. (Dealers write!)

MEAD SPECIALTIES COMPANY
Dept. T-1323
4114 No. Knox Avenue, Chicago 41, Ill.

Copyrighted material

SURPLUS TOOL BARGAINS TO SAVE YOU UP TO 85%

SAVE BY MAIL! ORDER TODAY

SPECIAL OF THE MONTH!

HIGH SPEED DRILLS

¼" to ½" with ¼" Shanks
½" to 1" with ½" Shanks

HIGH SPEED DRILL BITS UP TO 17/32" FOR YOUR ¼" DRILL AND HIGH SPEED DRILL BITS UP TO 1-3/16" FOR YOUR ½" DRILL. The Tungsten steel content of these drills means they will outlast carbon and regular steel drills many, many times. New and used surplus.

DRILLS UP TO 1 3/16" FOR YOUR ½" DRILLS!
Will Fit Any Size Chuck ½" and Larger.

SIZE	PRICE EA.	SIZE	PRICE EA.
33/64	$ .91	25/32	$1.86
17/32	.91	51/64	2.05
35/64	1.14	13/16	2.05
9/16	1.14	53/64	2.15
37/64	1.24	55/64	2.25
19/32	1.24	⅞	2.25
39/64	1.30	15/16	2.43
41/64	1.43	31/32	2.50
21/32	1.43	1-1/32	2.80
43/64	1.55	1-1/16	3.05
47/64	1.80	1-5/64	3.56
¾	1.80	1-5/32	3.98
		1-3/16	4.10

DRILLS UP TO 17/32" FOR YOUR ¼" DRILLS!
Will Fit Any Size Chuck ¼" and Larger

SIZE	PRICE EA.	SIZE	PRICE EA.
¼	$.30	25/64	$.60
17/64	.45	13/32	.60
9/32	.45	27/64	.65
19/64	.48	7/16	.65
5/16	.48	29/64	.73
21/64	.50	15/32	.73
11/32	.50	31/64	.75
23/64	.55	½	.80
⅜	.55	33/64	.90
		17/32	.90

COMPLETE SETS OF H. S. DRILLS, ALL WITH . . .

¼" shanks from ¼" to ½" by 64ths. 17 drills—only ..... $ 7.98
½" shanks from ½" to ¾" by 64ths. 17 drills $19.95
½" shanks from ¾" to 1" by 64ths. 17 drills $39.50

COMPLETE H. S. TAPER SHANK DRILL SETS By 64ths.

¼" to ½"; 17 drills **$8.95**
½" to ¾"; 17 drills have #2 Morse Taper **$14.98**
¾" to 1"; 17 drills. Drills have #2 and #3 Morse taper ... **$34.95**

DOUBLE-END END MILLS

SET 29K — 4 right hand H. S. ⅜" straight shank End Mills up to ⅜" dia..... **$3.98**

HIGH SPEED TAPER SHANK DRILLS

Size	Twist Length	Price Each	Size	Twist Length	Price Each
1 1/64	6½"	2.60	1⅜	5½"	5.55
1 1/32	6"	2.76	1 25/64	7"	5.75
1 3/64	8"	2.82	1 13/32	6"	5.80
1 1/16	7¼"	2.82	1 27/64	5"	5.80
1 5/64	7¾"	3.00	1 7/16	6"	6.00
1 3/32	6"	3.33	1 29/64	6"	5.80
1 7/64	9"	4.00	1 15/32	8"	6.13
1 7/64	18½"	8.50	1 17/32	7"	7.16
1⅛	8½"	4.00	1 35/64	8"	7.25
1 9/64	7"	3.75	1 39/64	7"	7.75
1 5/32	6½"	3.80	1 21/32	7"	8.00
1 11/64	7¾"	3.95	1 27/32	7½"	11.00
1 3/16	7½"	3.95	1⅞	9"	11.90
1 13/64	7"	3.25	1 29/32	6½"	12.00
1 7/32	8½"	3.70	1 31/32	7½"	10.00
1 15/64	7½"	4.51	2 5/16	7"	16.25
1 9/32	7½"	5.00	2 7/16	11"	21.50
1 19/64	5½"	5.10	2 15/32	13"	23.50
1 5/16	5½"	5.18	2½	11"	25.00
1 21/64	5½"	5.38	4	9"	34.50

AIR TANK—REGULATOR—MASK

- A4 Tank, 5"x8". 104 cu. in. vol. 500 PSI $1.50
- Demand Type Regulator complete with 500 PSI pressure gauge. Fits above tanks $1.50
- Mask complete with 14" of hose. Outlet valve. Fits above regulator $1.60

Above equipment suitable for air tanks, compressors, respirators, diving units, etc.

HIGH SPEED STRAIGHT SHANK DRILLS

SET 19K — 100 HIGH SPEED DRILLS: ¼" down. 30 new std. H. S. Drills—70 slightly used sharp drills lengths up to 7". $30 value. PPD. Only **$7.98**

SET 7K — 12 Different size H. S. straight shank Drills. ¼" to ½", lengths up to 7". Only **$3.98**

HIGH SPEED WOODRUFF KEY SEAT CUTTER

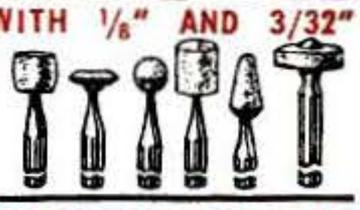
SET 4J — 5 different size cutters. Can be used as mounted milling cutter or circular saw. All with ⅜" and ½" shanks, widths up to ¼", dia. up to 1". New and used. Ppd. Priced at only **$3.95**

NEW ROTARY FILE MIX

7 different pcs., High Speed ¼" shank, PPD. . **$4.49**

SET 22J — 14 different pcs. as above, PPD. **$8.79**

MOUNTED POINTS WITH ⅛" AND 3/32" SHANKS

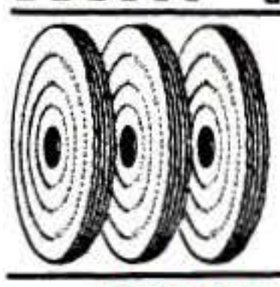


Assortment of:
10 stones $1.20
25 stones $2.75
50 stones $4.50

HIGH SPEED STRAIGHT SHANK CHUCKING REAMERS

SET 16K — 20 Different Size High Speed Straight Shank Chucking Reamers up to ½". New and used. Priced at only **$7.95**

SET 18K — 15 Different Size High Speed Straight Shank Chucking Reamers from ¼" to 1". New and used. Priced at only **$7.95**



NEW BUFFING WHEELS

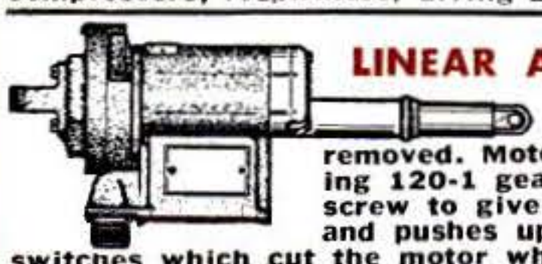
Available in 7", 8", 9" and 10" dia. PPD. Per pound, only **60c**
NOTE: Min. order 5 lbs. Mixture, or all of one of above sizes.

HYDRAULIC CYLINDERS

2" bore, ⅞" shaft, 12½" stroke. Double action double-end shaft can be mounted stationary allowing cylinder to slide. Wt. 14¾ lbs. F.O.B. Tulsa **$12.95**

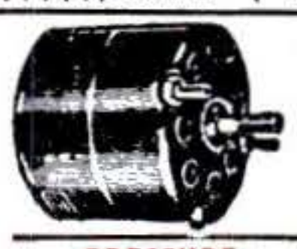
2¼" bore Cylinder. 15" stroke. Double action all steel. Rated 3,000 PSI. F.O.B. Tulsa **$18.95**

1½" bore Cylinder. 4" stroke. Double action. Rated at 1,000 PSI. PPD. **$3.95**



LINEAR ACTUATOR

This unit contains three separate mechanisms; a ⅛ h.p. motor operates on 12 to 32 volts DC or AC if magnetic brake is removed. Motor is 7500 rpm; Motor drives ball bearing 120-1 gear box, which operates precision ground screw to give 5⅛" push or pull. Pulls up to 1750# and pushes up to 850#. Unit has automatic electric switches which cut the motor when fully extended or fully closed, thus preventing harm to unit. Can be used for valve operation, window or door operation, etc. Unit wt. 7 lbs. Gov't. cost over $200. This unit is yours PPD. for only **$9.95**



1/20 H. P., 110-VOLT MOTOR

60 cycle A.C. 1550 RPM. bronze bush bearing. 5/16" shaft. Wt. 4 lbs. Used, guaranteed serviceable. Only **$3.50**

PRESSURE GAUGES

4½" DIAL, std. quality gauges. Std. pipe conn. Finest brands retailing at $7.00 and up. 15#, 30"-0-100#, 500#, 700#, 800#. Your choice. Each only **$4.00**

6" DIAL. high quality gauges. Mfd. by Ashcroft and Crosby. Reg. price up to $30.00. 5#, 6#, 10#, 20#, 24#, 30#, 100#, 300#, 400# and 1500#. PPD. Your choice, each **$5.25**

8½" DIAL gauges, 30"-0-30#, 30"-0-200#, 300#, 500#, 600#, 30"-0-800#, 30"-0-1000# and 1500#. PPD. Each **$6.00**

ELECTRIC MOTOR BARGAIN

½ H.P. 5,000 RPM, 110 volt, A.C. or D.C. ½-20 thd. shaft. Ideal for routers, grinders, etc. PPD. **$14.98**

24-VOLT TRANSFORMER

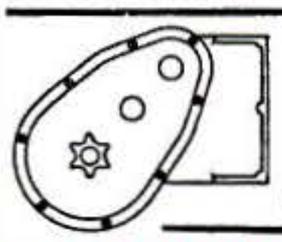
110-volt A.C. to 24-volt. 3 amps. Just the thing for your small 24-volt motors.. **$1.95**

PESCO HYDRAULIC GEAR TYPE PUMP

Rated at 3 GPM, 3750 RPM, 1500 PSI. ½" drive spline. Gov't cost over $90. Yours for only... **$9.49**

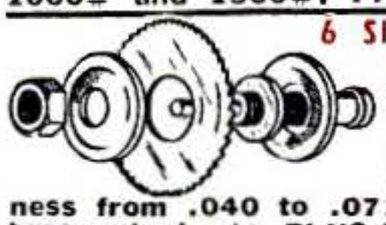
75:1 WINCH GEAR BOX

Complete with throw-out type clutch. Case has 3 mounting brackets. ⅜" input and output shafts. Gears encased, life-time grease seal. Ball-bearing throughout. (8 ball-bearings) Wt. 6¼ lbs. Suitable for winches, boat hoists, traversing mechanisms. PPD. **$6.95**



60 TO 1 GEAR BOX

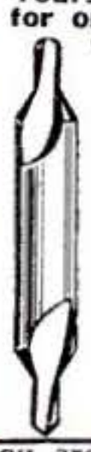
5/16" dia. input shaft, ½" dia. output shaft with removable sprocket. Wt. 6 lbs. PPD. **$5.45**



6 Slitting Saws with Mandrel

SET 34K — 6 different size high speed slitting Saws, 5 pcs. 2¾" dia. x 1" arbor, plus 1 pc. 5" dia. x ½" arbor. Thickness from .040 to .071. Cuts wood, aluminum, brass, steel, etc. PLUS SPECIAL MANDREL which enables use of saws in ¼" or ½" electric drill. $25 value. PPD. Only **$4.95**

7 selected, sharp H. S. Slitting Saws as above to use on your own mandrel or milling machine. New and used. PPd. A bargain at **$4.95**



NEW HIGH SPEED DRILL AND COUNTERSINK COMBINED

60 Degree Angle of Countersink

Size	Size of Drill	Body	Price Each
A-1	3/64	1/8	.25
B-1	.055	5/32	.25
E-1	3/32	3/10	.60
E-2	1/8	3/10	.60
M-2	9/32	5/8	.90

BARGAIN TOOL and SHOP MIXES, Ppd.

- 30 GRINDING WHEELS ¼" arbor, 4" dia. max. Plus mandrel **$3.29**
- BEARING MIX: About 40 needle, ball and roller bearings; new and used. Up to 2½" dia. approx. 5 lbs. Outstanding buy at **$2.95**
- SURPRISE MIX: Over 50 pcs. for your ¼" elec. drill including rotary files, drills, bits, reamers, grinding wheels and arbors for our customers who like pleasant surprises. Your money back if you aren't satisfied..... **$2.98**

YOUR MONEY BACK on receipt of merchandise if you are not satisfied. All mdse. mixture of new and reconditioned unless specified new. All orders (except those specified F.O.B. Tulsa) are shipped Post Paid saving you up to 25% on total delivered cost.

T & T TOOL 221 W. SECOND TULSA, OKLA.

Write For Free Catalog Describing Thousands of Bargain Cutting Tools.

NOW! SAW 2x4's IN ONE EASY CUT WITH NEW LARGER 'ARCO-SAWS'

AMAZING NEW SAFE-CUT BLADE ALLOWS ANY 1/4" DRILL TO WHIZ THRU HEAVY LUMBER, WALLBOARD, PLYWOOD, etc.

At last, here are the first—**the only**—gear driven saw attachments to whiz thru 2x4's in one cut! Imagine, now you can build **anything** from bookcases to a bungalow with these sensational new saws. A moderately priced drill will do the job because of new "ARCO SAFECUT" Blade.

ONLY "ARCO" GIVES YOU THESE FEATURES: 5-inch Safecut Blade—cuts faster—uses 30% less power, **Graduated Depth & Bevel Gages** for cuts to 1¾"—bevels from 0 to 45°, **Adjustable Rip Gage & Visual Guide, Sturdiest and Easily Adjusted Safety-Yoke** keeps drill steady, **Worm Drive Clamp** releases drill in seconds, **Precision Gear Box with Steel Gears.**

90-DAY FACTORY GUARANTEE

REPLACEMENT BLADES: Specify 5" Safecut, or Combination, or Rip, or Crosscut Style..... **$1.75**

NEW! 'ARCO STAND 'N TABLE'

MAKES A WORKSHOP OUT OF EVERY 1/4" ELECTRIC DRILL! HAS TILTING TABLE FOR Sanding, Grinding, Buffing, etc.

Sturdy Aluminum Castings hold complete unit vibration-free, allows operator to use both hands. Consists of strong **Drill Stand** with Worm Drive **Clamp** and adjustable **Table.** Tilts to 45°, adjusts up or down for various jobs. Rubber cushioned **Sander** for beautiful sanding, can also be used in drill alone or drill press. **6 Sanding Discs and "Speed Cement".**

No. 401 "ARCO STAND" consists of Drill Stand & Worm Drive Clamp only..... **$2.75**

UNCONDITIONAL 10-DAY MONEY-BACK GUARANTEE

DEALERS: Write for nearest jobber

BUY THE BEST—see your hardware dealer now! Don't accept inferior substitutes—if not available send us check or M.O. (Postpaid). C.O.D.'s—postage extra.

ARROW METAL PRODUCTS CO.

Dept. PS-2, 140 WEST BROADWAY, N. Y. 13, N. Y.

PUMP WATER *FAST!*

DRAIN WASH TUBS, CELLARS, CISTERNS IRRIGATE—FILL TANKS—DRAW WELL WATER

Pumps 2800 GPH. 420 GPH at 75' High or 1600 GPH from 25' well. Sturdy, Rustproof Alloy Metal. Six Blade Impeller. Uses any 1/8 to 1/2 H P Motor Will not leak or clog. Fits any garden hose. Immediate Money Back Guarantee. Send Check, M O, or C.O D. **8.95** IN U S

MOORE MANUFACTURING CO.

SWEDESBORO 2 NEW JERSEY

LEFAX

POCKET SIZE TECHNICAL DATA BOOKS $1. EACH

Printed on loose leaf, six hole, 6¾" x 3¾" bond paper, each book contains about 140 pages of technical data, presenting condensed, accurate and essential data for the student, engineer, technical worker and business man.

Architecture	**Building Constr.**	**Piping Data**
Home Heating	**Radio**	**Surveying Tables**
Illumination	**Television & FM**	**Trig-Log Tables**
Electrician's Data	**Electricity, AC**	**Metallurgy**
Builder's Data	**Electricity, DC**	**Analytic Chem.**
Lumber Data	**AC Motors and Generators**	**Highway Eng.**
Air Conditioning	**Transformers, Relays, Meters**	**Mech. of Materials**
General Math.	**Hydraulics**	**Pwr. Trans. Mach.**
Math Tables	**Surveying**	**Thermodyn. Tbls. & Charts**
Physics	**Mech. Drawing**	**Phys. & Thermodyn. Data**
Chemical Tables	**Machine Design**	**Phys. & Org. Chem.**
Metals	**Machinists Data**	
Gen. Chemistry		
Reinf. Concrete		

Write for FREE catalogs (over 2000 listings). See for yourself how helpful LEFAX can be to you. Send $1 for each book, (or $5 for any six books listed above) to

LEFAX DEPT. PS-11 PHILADELPHIA 7, PA.

Your Finest Buy for HOME, FARM, WORKSHOP!

Black & Decker

ELECTRIC UTILITY TOOLS

PORTABLE ELECTRIC TOOLS

DRILLS • SANDER-POLISHERS • SAWS

MIRACLE POWER

In Gas and Oil Every 1,000 Miles

Stops Dry Starting Damage

Buy U. S. Defense Bonds

SAVE UP TO $100.00

on your STORM WINDOWS

Assemble Combination Redwood or Aluminum Storm Windows Yourself!

These patented storm windows regularly sell for $22.75 assembled. Now **only** $6.65 knocked-down and shipped to you. With only screen cloth and glass to buy locally, your total storm window cost is only about $8.50 each. Upper and lower sash snap out **from inside** for easy washing. Screen replaces bottom sash during warm months—self storing in upper portion in winter. Frame stays in year 'round. No storage problem whatsoever. Only top-quality kiln-dried redwood. All standard window sizes. Write for descriptive bulletin today, or send cash, check or money order, for quick delivery.

$6.65* each

**Redwood 24/24 Glass—others, slightly higher*

DEALERS: A few choice areas are still available

BUCKEYE SCREEN & WEATHERSTRIP CO.

1378 S. 22nd Street, Columbus, Ohio

YOU SAVE $$$$—WITH THESE PLAN BOOKS!

Either you or your contractor can build from our plan books. Money spent in pre-planning more than pays for itself in savings and happiness with the finished results. A few dollars now will save you hundreds in construction costs later.

You'll get wonderful, new, exciting ideas from these books—so order today!

New! Ranch and Country Homes, $2.00
Hundreds of new ideas with accent on ranch and country styles. Just off the press.

Harmonious Homes $1.00
Mostly homes but some income property for all types of construction. Most flexible home plan book now in print!

Small Homes—Volumes I, II, III, $1 ea.
Packed with plans for distinctive small homes.

SPECIAL OFFER—
All 5 volumes listed above for only **$4.50**
Builder-endorsed Blue Prints as low as $15 (meet FHA requirements).

COMPLETE HOME PLAN SERVICE 17261-77 OSBORNE ST., NORTHRIDGE 2, CALIF.

NO C.O.D.'S PLEASE

Copyrighted material

SHOP BY MAIL AND SAVE

GENERATING PLANTS

Available for IMMEDIATE DELIVERY

WAR SURPLUS and NEW MANUFACTURE

ORDER DIRECT FROM AD

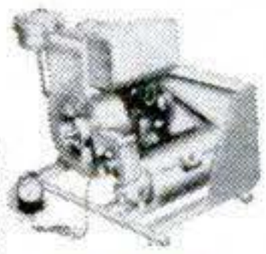
Large Stock—Many Sizes from 350 Watts to 25 KVA

ITEM #183

Item #183—3000 to 4000 **WATT GENERATOR SET—FEATURES**—Power for your home or business. Simply connect to power panel or house circuit. • Constant voltage regardless of load. • Push button start or stop. • Easily made full automatic start or stop. **SPECIFICATIONS**—Sizes 19"x30"x48". Steel skids, weatherproof housing, requires no building. Wt. 725 lbs. • Hercules 4-cyl. 10 HP gasoline engine. Load governor. Oil filter. Quiet muffler, 6-volt starter, generator. • Hobart 115 volt, 60 cycle, 3000 to 4000-watt generator. Furnishes either single or three-phase power, 2 or 3 wire. • Panel contains oil gauge, voltmeter, ammeter, circuit breaker, voltage regulator, start button. Today's cost over $1200.00. SALE PRICE, F.O.B. Chicago..... **465.00**

NEW GROBAN MANUFACTURE

Model 251



Item #2510

2500 watts, 115 volts, 60 cycles, single phase, A.C. electric generating plant, powered by dependable 6.5 H.P. Wisconsin engine—Two pole ball bearing belt driven high efficiency generator with heavy duty windings for high torque motor starting loads. Rated 3000 watts for intermittent service. Light weight portable rugged unit, easily transported to job site. Consumes 3 quarts of gas per hour at rated load. Dimensions: 24"x20"x24", ship. wt. 220 lbs. Complete with fused outlet box and voltmeter. F.O.B. Chicago **349.00**

TINY TIM BATTERY CHARGER

Item #301 — Model 125 to charge 6 and 12 volt batteries—12 volts—300 Watts; Heavy Duty Generator; Push button self-starter; 2 qt. gasoline tank in base; Ammeter; Generator cut-out; Concealed coil, etc.; Speed and charging rate control; Attractive orange finish; Weight 93 lbs.; Length 15½", width 11¾", Height, 14¾". F.O.B. Chicago..... **89.00**

Item #182, Power Unit PE-95C is an electric generating set consisting of a 4 cylinder, 4-cycle, L-head, liquid-cooled, electric starting gasoline engine, directly connected to an AC generator of the revolving field type. Engine is rated 24 HP at 1,200 RPM, uses Approx. 1.1 gal. of gas per hr. at rated load—generator is rated at 5 KW, 60 cycles, single phase, 115V, 52 AMPS at 80% power factor. F.O.B. Chicago **795.00**

Item #82A, Same model as above, with dual voltage 110/220 V. F.O.B. Chicago **845.00**

Item #300—Model C1B—3 KW—110 Volts D.C. This mighty mite develops 3 KW—28.5 amps. D.C. Standard Delco generator direct coupled to a Model ZZP Briggs and Stratton 1 cylinder, 5-7 HP, air cooled, rope starting gas engine. Instruments include voltage control rheostat & voltmeter. Wt. 275 lbs. F.O.B. Chicago **295.00**

HEAVY DUTY HYDRAULIC and AIR EQUIPMENT

Large supply of new labor-saving, economical hydraulic equipment in many types and sizes. Use these positive, highly efficient smooth pressure hydraulics on presses, arbors, lifts, loaders, power control, positioning, brakes, plastic dies, auto frame alignment, etc.

ALL ITEMS UNCONDITIONALLY GUARANTEED

ITEM #350

LOGAN AIR CYLINDER Item #350 — Double acting pneumatic cylinder, 6" bore, 6" stroke, 1½" shaft. Adjustable cushions at both ends. Flange mounting at shaft end. Overall length closed 18". Ideal for use in 125 PSI systems. Shipping weight 40 lbs. F.O.B. Chicago.... **39.50**

LOGAN 4-Way, Foot Operated AIR VALVE, Item #59. Model 6520—Ideal for operating air vises, presses, air machinery, and other double acting pneumatic devices. Heavy cast construction. Standard ½" pipe thread ports. Overall dimensions 8½" x 5¾" x 7½". Gov't. Acquisition cost $42.00. Shipping weight 28 lbs. An outstanding buy. F.O.B. Chicago **15.00**

ITEM #59

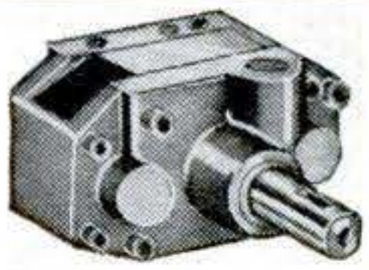
ITEM #1036

ITEM #42—Double action hydraulic cylinder, 4" bore, 18" stroke. Rated lift capacity with 1000 PSI line pressure is 12,500 lbs. Ship wt. 30 lbs. F.O.B. Chicago. An Excellent Buy for..... **32.50**

Item #16C—Double acting hydraulic cylinder, 1½" bore, 26" stroke. Will lift 1760 lbs. with 1000 PSI line pressure. Weight 8 lbs. A $55.00 value. Now only..... **16.95**

Item #1036—Double acting hydraulic, 3" bore, 36" stroke, ½" pipe thread ports, 1¼" solid steel shaft. Overall length closed 49", clevis mounting at base and shaft. FEATURES • Cup & Chevron Packing • All Welded Construction • Precision Ground and Honed Construction • ¼" Seamless Steel Tubing Cylinder Case. Weight (net) 57½ lbs. F.O.B. Chicago **50.00**

PUMP PRESSURE (PSI)	LIFT CAPACITY (LBS.)
500	3535
1000	7069
1500	10604
2000	14138



Item #29KJ—Gear Type Hydraulic Pump. Ideal in industrial applications and for operating all hydraulically powered farm implements including loaders, stackers, swathers, plows, etc. Delivers 1000 PSI (may be set at lower PSI if desired). 12 GPM at 400 RPM. Maximum operating speed 800 RPM—rotation counter clockwise. Has built-in relief valve, permanent or torque bar mounting. 1" diameter shaft, ¾" pipe tap inlet, ½" pipe tap outlet. Ship. wt. 22 lbs. F.O.B. Chicago **45.50**

Item #126—Four-way, open center control valve with built in adjustable relief valve. Factory set at 1000 P.S.I., spring loaded neutral position, for use with one double acting cylinder. In neutral position cylinder is locked and pump unloaded. Fully balanced plunger type, smooth, positive easy operation, can be used as single unit or mounted in series of any combinations desired. Has ¾" pipe thread inlet and outlet, ½" pipe thread cylinder ports. Newly manufactured to our specifications. Shipping weight 8¼ lbs. An outstanding buy! F.O.B. Chicago. **21.50**

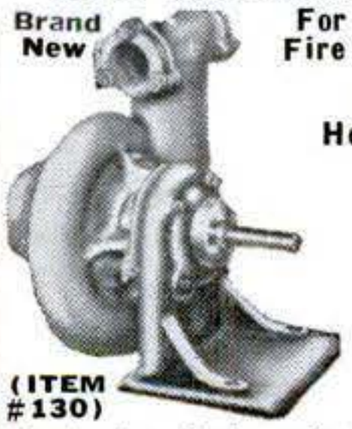
Item #126

CENTRIFUGAL PUMP

General Motors — Allison

200 GALLONS PER MINUTE

Brand New



(ITEM #130)

For Draining Basements
Fire Fighting • Irrigation
Fuel Transfer
Swimming Pools
Home Water Systems
Dewatering

Converted for high volume commercial, home, and industrial use. Standard 2½" pipe thread inlet, twin 1¼" pipe thread outlets. Ball bearing supported ¾" shaft. Easy priming. Rotation, counter-clockwise facing shaft. Gov't. acq. cost $145.00. Complete with full instructions. Ship. wt. 35 lbs. F.O.B. Chicago **39.50**

TYPICAL PERFORMANCE DATA

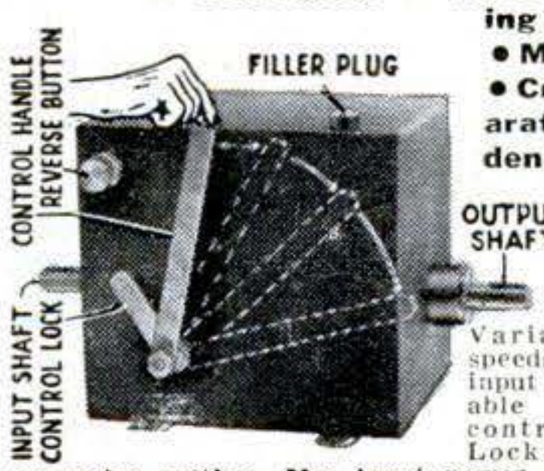
Suction Lift	Head Pressure	Gal. Per Min.	H.P.	R.P.M.
10'	75'	260	6.0	3500
10'	65'	200	5.2	3500
10'	80'	40	1.5	2500
10'	50'	140	5.0	3500
10'	30'	100	3.0	2500

FREE 1953 CATALOG. 48 Pages, chuck-full of unsurpassed war Surplus Equipment Bargains for farm, home, factory and workshop. Every item is unconditionally guaranteed. You save on everything! Write today.

HYDRAULIC SPEED REDUCER

ITEM #115 WITH FINGERTIP CONTROL

USE FOR: • Reamer Drives • Midget Cars • Feed Mills • Canning Machines • Conveyors • Lathes • Milling Machines • MotorBoats • Cream Separators • Garden Tractors • Pumps



Variable output speeds from 0 to input speed available by moving control handle. Locking handle maintains setting. Use input power of ¼ to 1½ H.P. This Westinghouse-Oil Gear Unit consists of a variable displacement hydraulic pump feeding a fixed displacement hydraulic motor. Adjustable relief valves set at factory for 100 inch pounds of torque may be reset up to 180 inch pounds. Independent reverse control allows full output power and speed selection in either direction of rotation. Shafts measure ⅝" diam., include keyway. Input rotation is counter-clockwise facing shaft. Recommended input speed not to exceed 750 R.P.M. Over-all dimensions, 7½"x7½"x11½". Gov't acquisition cost, $428.00. Ship. wt. 31 lbs. Complete with 2 qts. of oil and full instructions. F.O.B. Chicago **54.50**

ARC WELDER

NEW MODEL 353—DUAL RANGE

for Stationary or Portable Use

Heavy Duty Range To 250 AMPS.

New 'Magic Terminal' For Low Current 30 to 100 Amps

Welds Anything From Auto Fenders To Tractor Frames

IDEAL FOR • FARM • GARAGE • FACTORY • WORKSHOP. These precision engineered D. C. Arc Welders contain the highest quality War Surplus aircraft components built to exacting government specifications. They are light in weight, have oversized lifetime grease-sealed ball bearings, air cooled commutator, dial type rheostat for easy pin-point control, a high-low rheostat switch, reactor coil for even arc and the new 'MAGIC TERMINAL' low current welding range for welding lighter materials. Designed for many years of trouble-free service. Run welder from drive pulley or power take off of a tractor or Jeep, 7½ HP electric motor or 10 HP gas engine at 2500 R.P.M. Uses two V belts or flat belt. Continuous output rating 200 amps. Intermittent welding rating 250 amps, 30 volts. This sensational price includes double V or flat belt pulley and complete operating instructions. Ship. wt. 107 lbs. $350.00 Value. **Item #65.** Now only.. **119.50** F.O.B. Chicago

ORDER DIRECT FROM AD — SEND PAYMENT OR PURCHASE ORDER TODAY — SATISFACTION GUARANTEED

GROBAN SUPPLY CO. 1139 SO. WABASH AVE., CHICAGO 5, ILL. DEPT. PS-2

Copyrighted material

SELF-CONTROL STARTS HERE

AND TO RESTORE
CAR PERFORMANCE

OIL-CONTROL STARTS HERE

To stop oil-pumping, replace worn engine connecting rod bearings

Worn engine bearings cannot tell a lie—they shout "trouble"! Worn main and connecting rod bearings let excess oil reach combustion chambers, burn to carbon on pistons, rings, valves and spark plugs. *Performance goes up in smoke!* When your car, truck or tractor engine loses its zip, check for worn bearings, as well as rings. Genuine Federal-Mogul Oil-Control bearings restore power, pep and economy. *Ask your mechanic!*

FEDERAL-MOGUL SERVICE

(Division of Federal-Mogul Corporation)

DETROIT 13, MICHIGAN

CARE WILL SAVE YOUR CAR

CONTROL OIL-PUMPING WHERE IT STARTS—REPLACE WITH

FEDERAL-MOGUL

OIL CONTROL **BEARINGS**

C2

COLORCRETE

Lifetime beauty comes out of a gun! Colorcrete is a cementitious plastic, applied by pneumatic pressure to new or old concrete, stucco, etc. Tough, tenacious, enduring. Can be washed or scrubbed. Dirty, drab surfaces become sparkling white or tinted from a range of 30 colors.

"Building-Beautifying" – *Your* Big Opportunity

Colorcreting is a fascinating and profitable opportunity for men who want to build a substantial, long-term business. Colorcreting is exclusive. Rich in sales appeal to building owners. Income potentials are high; investment is low. We supply complete equipment, full instructions and liberal cooperation. Requires no previous experience or special ability. Write or wire for the Opportunity Book today. Be the first in your community.

COLORCRETE INDUSTRIES, INC.
572 Ottawa Ave., Holland, Mich.

AUTOMATIC RETOOTHER

MAKES NEW **PROFITS**

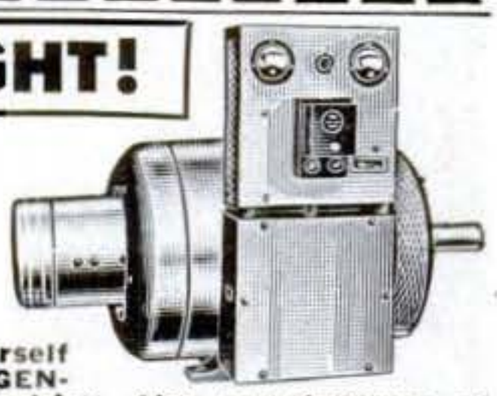
for **HAND SAWS**

Cuts new teeth in 50 seconds – any size 4 to 16 points. Old teeth fall off as chips. Easy to operate. A perfect job

FREE! Write Now for Descriptive Literature

BURR MFG. CO.
8943-H VENICE BLVD. LOS ANGELES 34, CALIFORNIA

WHAT! NO LIGHT!



You'll have AC Electricity anywhere . . . anytime with

KATO GENERATORS!

KATO AC GENERATORS furnish the same kind of AC current as the high lines. Sizes range from 500 watts to 300 kilowatts. Protect yourself from power failure with a KATO AC GENERATOR. Can be arranged for tractor drive. Also manufacturers of rotary converters, frequency changers, high frequency generators, AC and DC motors and motor generator sets. Write Today!

KATO *Engineering Company*

1401 FIRST AVENUE, MANKATO, MINNESOTA

How to maintain floors

Clean, sparkling wood floors are simple to have and hold. Free book tells how. Easy step-by-step pictures explain. Send coupon now for Free copy. Limited printing so write today

FREE MAIL THIS HANDY COUPON RIGHT AWAY

Red Devil Tools, Irvington 11, N. J.
Please send Booklet HT-332

NAME_____
ADDRESS_____
CITY_____ STATE_____

Copyrighted material

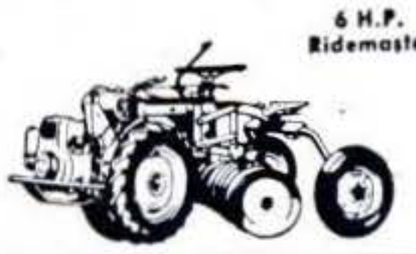
2½ H.P.
Power-Ho De Luxe

5 features prove: BOLENS garden tractors serve you better save you work all year 'round

Spare yourself the toil and trouble of hundreds of jobs around the yard, farm or garden. Let a Bolens tractor do the work *faster* and *easier*.

Compare feature for feature. It's proof of the labor-saving, money-saving advantages you get from a BOLENS — America's *first* and *finest* garden tractor *line*. There's a BOLENS to fit your needs and pocket-book. Ask your dealer for demonstration.

2½ H.P.
Super Handi-Ho



6 H.P.
Ridemaster

Only Bolens offers so much for your money

1. *Quicker Hitching.* Patented Snap-Hitch for fast, easy attachment of all implements.
2. *Smoother Running.* Rolls on precision needle bearings. Driven by powerful engine.
3. *Simple to Operate.* Responds instantly to finger-tip controls. Perfect balance.
4. *Easier, Shorter Turns.* Proved most maneuverable by actual test.
5. *Longer Life.* Rugged, compact construction for years of trouble-free service.

7 tractor models
111 tools and attachments
5 rotary mowers

for countless jobs all year 'round

Please send name of nearest dealer and free illustrated literature.

Name _____

Address _____

City _____

Bolens Products Division
Food Machinery and Chemical Corp.
267-1 S. Park St., Port Washington, Wis.

OWN a Cushman for as little as $44.50 Down Payment

CUSHMAN gets you there FASTER—CHEAPER

Up to 50 miles per hour
75 miles per gal.

3/4c per mile— Total Operating Cost!

Get your Cushman NOW! Use it to go to work or school or get new jobs—plenty of opportunity! Own it and ride it now. Pay for it as you earn—dependable, over 50 years of engineering experience. Go everywhere on a Cushman, America's best buy in low cost transportation.

Send for new FREE illustrated literature.
Ask your nearest Cushman dealer for FREE demonstration.

CUSHMAN MOTOR WORKS, INC.
Dept. PS-2, 900 No. 21st St., Lincoln, Nebraska

send for FREE CATALOG

America's Foremost
money-making
MECHANICS' TOOLS

It's easy to own the same "pay-off" tools used and endorsed by America's top-earning mechanics throughout the automotive, aviation and industrial fields! Snap-on tools help you handle every repair job faster, easier, better. And they LAST . . . pay for themselves over and over again! Start building your own tool set now with basic Snap-on units—add others any time. Genuine Snap-on tools are never sold in stores—direct to users only. Mail coupon for free catalog.

Snap-on Tools
THE CHOICE OF BETTER MECHANICS

SNAP-ON TOOLS CORPORATION
8060-B 28th Ave., Kenosha, Wisconsin

Send me free catalog of Snap-on tools.

Name _____

Address _____

City _____ Zone _____ State _____

Copyrighted material

5-HP GRAVELY Tractor

OFFERS 21 MONEY-MAKING TOOLS!

Make good money this spring plowing gardens with the powerful Gravely Tractor! Perfect seedbed in one operation. It's easy to earn $30 to $40 a week—*extra!*

After plowing season, use Sickle or Lawn Mower attachments for cutting brush, weeds, lawns. Remember, with 21 tools, Gravely does *every* lawn, garden and field job! All-gear drive, power reverse; moderate investment.

An easy way to get a Gravely of your own—and make a profit besides! "Power vs. Drudgery" tells you how to put Power to work making money for you! Write *today!*

★GRAVELY★

BOX 284 DUNBAR, W.VA.

FIELD-TESTED FOR 32 YEARS

BENJAMIN SUPER CO_2 GAS PISTOL

NEW! Different

SAFE • NON-TOXIC • HI-POWER
ACCURATE • ECONOMICAL
CONVENIENT • PRACTICAL

Easy to operate—Uses low cost Soda Cartridges. Shoots Cal. .177 Benjamin H-C Pellets & Darts or BB. **Write Today for Illustrated Folder of All Models Benjamin Air Rifles and Benjamin Air Pistols.**

$15.00

Benjamin Air Rifle Co., 852 Marion St., St. Louis 4, Mo., U.S.A.

new, easy way to.. STRIPE with PAINT

Do Perfect Paint Striping at Home with New Kind of

PAINT STRIPING TOOL

This Master Painters' **Striping Tool** makes it easy to do expert striping on furniture, bikes, model planes, autos, signs, toys, linoleum, wall board, etc. Makes plain, painted walls look like tile. Paint straight lines . . . curved . . . circular or evenly spaced parallel lines the same way a professional painter does. Simply fill Tubular-Glass Paint Fountain with any color paint and wheel tip feeds paint evenly. Tips interchangeable—jaws split apart for easy cleaning. Tool complete with tips for 1-16 in. stripe only $1.00 postpaid. Other complete tools with 1-64, 1-32, 3-64, 5-64, 3-32, 1-8 inch tips, $1.50 ea. Extra tips — 75c each. **COMPLETE KIT** with tool and 7 tips, $5.00. Here's the handiest tool in your whole painter's kit. C.O.D.'s post. coll.

$1 ONLY POSTPAID

ATTENTION Home Craftsmen and Hobbyists

Just the tool you've been waiting for! New PAINT STRIPING tool gives "professional" results every time, yet simple and easy to use as a fountain pen. Adjustable guide keeps lines straight as an arrow. Just as easy to make curves or free hand designs. Adds new beauty and finished look to everything you paint. Send dollar today.

DEALERS
Paint Striping Tool
packed in attractive display cartons of 1 doz. Fast, profitable seller. Write for illus. circular, discounts.

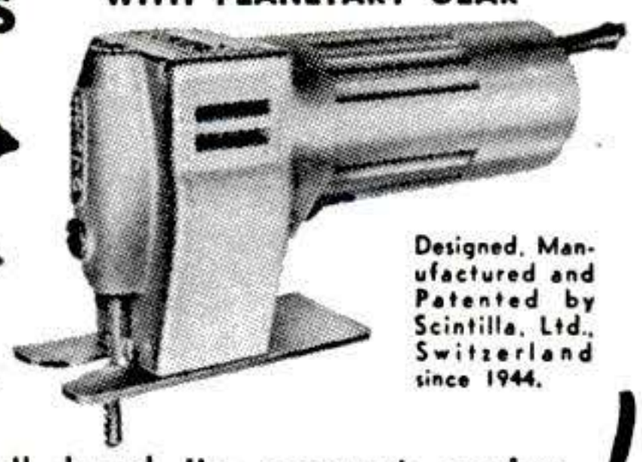
WENDELL MFG. CO., 4234 N. Lincoln Ave., Dept. 22-T, Chicago 18, Ill.

LESTO *Electric* HAND SAW

WITH PLANETARY GEAR

NO OTHER DOES

SO MUCH
SO FAST
SO WELL



Designed, Manufactured and Patented by Scintilla, Ltd., Switzerland since 1944.

At Last — a rip, scroll, band, jig, crosscut, coping, and keyhole saw — all in one. Quick, easy, ideal for curves and fanciest shapes. Cuts inside holes without drilling starting hole. Users say there's nothing to equal it on wood, sheet metal, bone, plastics, hard rubber, cement sheets, pressed wood, etc. For factory, home workshop, carpenters, decorators, etc.

FREE Illustrated Literature. Write for Yours Today.

Sold & Serviced in Principal Cities Throughout U.S.A.

VICTOR J. KRIEG, Inc.

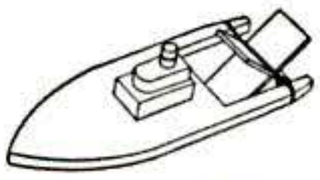
Sole U.S. Representative for Scintilla, Ltd. Switzerland
51 West 52nd St., New York 19, N. Y.

The Modern PLASTIC for lasting Home Repairs

PERMANENTLY mends cracks or holes in wood, tile, stone or plaster. Sticks and stays put—Does not chip, shrink or fall out. Easy to use. Economical. Mold it, chisel it, polish or paint it. If unobtainable from your lumber, paint or hardware dealer, the big 4-lb. can will be sent you postpaid (in U.S.) for only $1.25. Full money-back guarantee, order now.

DONALD DURHAM CO.
323 School St., Des Moines, Iowa

NEW TOY PATTERNS—6 FOR 25¢



Happy hobbying for you . . . happy playing for the youngsters. Full size patterns—trace and cut out. Send for **Patterns P I:** Paddle Wheel Boat, Clacker, Tumbling Clown, Cradle, Insert Toy, and Fighting Roosters, all for 25c postpaid. STANLEY TOOLS, 422A Elm St., New Britain, Conn. In Canada: Stanley Tool Company of Canada, Ltd., 423A Stanley St., Roxton Pond, Quebec.

STANLEY
Reg. U.S. Pat. Off.

COLD ROOMS? HIGH FUEL COSTS?

FURNACE BLOWER—LIMITED TIME!

Install in your cold air return, high volume blower, quiet belt drive, long hour duty motor, thermo overload, protected sight feed oil gauge, balance blower wheel, adjustable motor pulleys, self-aligning bearings.

$26.95

Blower, complete with Mtr. & Drive $44.95

FANS

Kitchen Ventilators, Exhaust Fans, Attic Fans, Blowers, Heat Boosters. $7.95 up. Desk Fans, Window Fans, Blades, Guards, Shutters, Motors, etc.

Dealer inquiries invited

EDWARDS BROS. ESTAB. 20 YEARS

WESTAIR FAN AND BLOWER CO.
5650 Grand River Ave., Dept. 4, Detroit 8, Mich.

Copyrighted material

CUT-TO-FIT HOMES CUT BUILDING COSTS

CHOICE OF 57 DESIGNS

ORDER NOW

SAVE UP TO 1/3

Build your own home and save the builders' profit—plus savings in lumber and labor with Sterling Ready-Cut-Homes. Anyone can assemble with simple, easy to follow plans furnished. Every house complete with all lumber, roofing, nails, glass, hardware, paint, doors and windows marked ready to erect. Freight paid. Complete building plans ready for filing at low cost. Sold separately if desired. Write today!

PRICED FROM $2150 UP

Five Easy Payment Plans

Send 25c for *NEW* COLOR CATALOG

INTERNATIONAL MILL AND TIMBER CO.
DEPT. P.S. 23 BAY CITY, MICHIGAN

At Last! A PORTABLE Motor-Welder

9 TOOLS IN 1

- √ WELDS
- √ BRAZES
- √ GRINDS
- √ SANDS
- √ POLISHES
- √ BUFFS
- √ BRUSHES
- √ POWER UNIT
- √ CHARGES BATTERIES

HAS SELF-CONTAINED MOTOR GENERATOR JUST LIKE BIG PLANT UNITS

MOTOR WELD is the only known motor-generator type unit that has its Large Amperage Output, is self-contained, yet has light-weight "Pickup" Portability and sold at transformer price levels. Low cost, economical operation. No special wiring—just plug into any 110 volt AC or DC line (any cycle) and it's ready to use! Its portable POWER UNIT can be used to operate saws, grinders, etc. Other models (150–225 amp.—Cart Models, etc.) available.

Motor-Weld Model 1A—recommended for hobby and home work. Comes as illustrated above. 110 volt, 60 cycle AC or DC. Four speeds and welds up to 3/16" steel. Uses up to 3/32" rod. (80 amps.) Ship. Wt., 40 lbs. F.O.B. Chicago, Ill. **$54.75**

Battery charger attachment, $5 extra.

Send for FREE Literature

10-DAY FREE TRIAL

90-Day Warranty On All Machines

Send remittance with order: will ship C.O.D. ($15 deposit)

Porto-Weld Model 2A—recommended for repair, maintenance, and installation work. Comes as illustrated above. 110-220 V.-AC or DC. 7 welding ranges and welds up to 3/8" steel. Uses up to 1/8" rod. (150 amps.) Shpg. Wt. app. 80 lbs. F.O.B. Chicago, Ill. **$98.50**

Battery charger attachment, $5 extra.

PORTABLE MOTOR WELD

GENERATOR SALES CO. • 1627 N. Damen Ave. • Dept. E • Chicago 47, Ill.

Now you can clean your carburetor right on the engine!

CARBURETOR GUMOUT CLEANING

The complete job takes just 20 minutes with GUMOUT and the easy-to-use applicator called the GUMOUTER.

Don't dismantle the carburetor. It's no longer necessary. GUMOUT cleans out all dirt, muck, moisture, gum and varnish—eliminates a frequent cause of engine trouble and roadside breakdowns. Your carburetor cleaned with GUMOUT will give smoother performance and gasoline economy.

Get GUMOUT and the GUMOUTER from your favorite auto supply store or order direct. Write for the free *Carburetor Handbook*.

GUMOUT DIVISION
Pennsylvania Refining Co.
Cleveland 4, Ohio
Butler, Pa. Edgewater, N. J.

Refiners of Penn Drake Petroleum Products since 1880

penn drake

GUMOUT DIVISION
Pennsylvania Refining Co.
2690 Lisbon Road, Cleveland 4, Ohio

Please send:

..... Pints of GUMOUT @ $1.50

. . GUMOUTER @ $4.75

. . . . Carburetor Handbook free

Name.....

Address.....

City.....Zone.. State.....

Copyrighted material

WAR SURPLUS AND OTHER BARGAINS — SAVE UP TO 90%

LOW VOLTAGE CIRCUIT TESTER

Made for U. S. Ordnance Dept. to rigid specification. Portable steel hand-carrying unit is a self-contained trouble shooting device for making a complete and rapid check of the generator battery circuit, incl. any circuit & voltage regulators. Battery voltage, regulators, cut-out settings & generator performance easily determined. It's great for garages, mechanics, truck fleet owners, boat and marine mechanics. Can be used on any 6 or 12 volt system. Approx. Govt. cost $175. NEW. Complete with instruction book, only **$32.50.** Shpg. Wt. 20 lbs.

"HELIOS" ORIGINAL TOOLMAKERS VERNIER CALIPERS

ULTRA PRECISION—Imported for the really critical mechanic who must have the best. Recommended and used by experimental and research machinists at Lockheed, Douglas, Bendix, GM, RCA, GE. ALL NEW and at low, low prices . . . but quantity is limited! Model 51-Genuine Helios. Hardened lapped precision surfaces. 1/1000" and 1/10 mm graduations. Has handy slide roll and thumb lock. Quick accurate depth. A $35 value, it's yours complete with leather carrying case for just **$6.95.**
Model 64-Helios 8". Glass hardened lapped jaws. Inside, outside measurements. 1/28" and 1/1000" verniers. Thumb guide and lock screw. A $45 value at the amazing price of **$7.50.**
Model 65-Helios 8". Glass hardened lapped jaws. Inside, outside measurements. Thumb guide and lock screw. Valued at $50, on sale while they last, for **$8.50.**
Model 76-Helios 8" Depth Gauge. Graduations 1/1000". Glass hardened. It's worth every bit of $25, yours now from Airborne for **$6.50.**

MICROMETERS

Chrome plated, precision engineered, carefully tooled to give long life. All new 0-1" capacity—$2.25 ea 1-2" capacity—$3.50.

HIGH SPEED DRILLS. ALL NEW. Fractional and numbered. Orig. value $18. Nationally known brand. Assorted sizes. Set of 30 just **$1.95.**
WIRE GAUGE DRILLS—From 45 to 60. Highest quality steel. You'll recognize the brand. Hard to get sizes valued at $7.50. Airborne gives you a set of 12 for **$1.75**

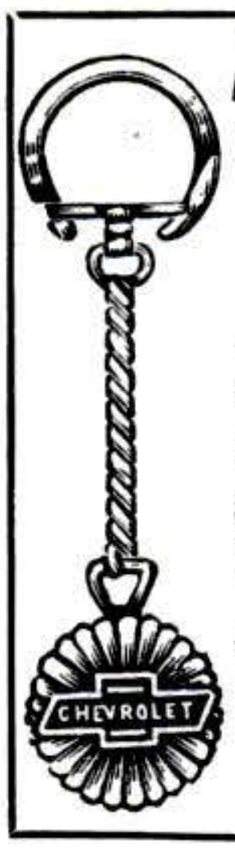
RIVET SETS Universal type, case hardened tips. Set of dies will head up only brazier or round head rivet from 1-1/6" to ¼". With adapters for air gun or hand use. All new—cost Govt. approx. $27.00. Complete 15 piece set (wt. 2 lbs.)----------**$5.00.**

SEND 25¢ for BIG·NEW·1953 CATALOG
Bargains for everyone. Check, Money Order or Cash. 25% deposit on C.O.D. orders. Prices F.O.B. Culver City, Calif., unless otherwise stated.

AIRBORNE SALES CO., INC., Dept. PS 253, 8501 Stellar Dr. Culver City, Calif

Auto Crest Key Chain

PERSONALIZED FOR YOUR CAR



- Crest is handsomely Chrome Plated & colored with enamel to match exact emblem of your car.
- Positive locking lever Chrome Plated Key Holder makes removal of keys quick and easy.
- Chrome Plated strong flexible spiral snake chain.

WHEN ORDERING PLEASE SPECIFY YOUR CAR NAME

Ford	Chev.	Dodge	Chrys.	Olds.	Cad.
Buick	Plym.	DeSoto	Pont.	Merc.	Stude.

- Buy for yourself or Ideal for gift giving. Money Back Guarantee.
- Send $1.00 New. Mailed prepaid. Sorry, no C.O.D.s.

$1.00

CREST CHAIN, 1915-B Archer Ave., Chicago 16, Ill.

DON'T LET YOUR BATTERY DIE!

Amazing "New Life" rejuvenator added to battery liquid stops build-up of plate sulfates . . . cause of 98% of battery failures. MAKES RECHARGING UNNECESSARY!
No more run-down battery worries. Use radio and accessories all you like. Give your car fast starting zip. Life of battery extended many months. Only one treatment needed. Guaranteed harmless. Money back warranty! Rush $1.00 to:

J. S. M. PRODUCTS CO., 1118 Castleton Rd., Cleveland Hts. 21, O.

- MADE OF HEAVY PLATE STEEL
- UNIVERSAL—FITS ALL EXHAUSTS

NEW! EXCITING!

JET EXHAUST CUT-OUT

Now your car can sound off those exciting, dynamic tones—easily controlled mechanically from your dashboard. Channel your exhaust through special pipes or muffler without removing your original muffler. Easily installed. MONEY BACK GUARANTEE
Send $4.95 check, cash, money order (postpaid) or C.O.D. plus postage to:
FUR SALES, 1031 E. 63rd St., Chicago 37, Ill., Dept. PS
DEALER INQUIRIES INVITED

FAMOUS Battle Saber

$2.95 POST PAID

Ideal for mounting on wall decoration. Two sabers can be attractively crossed.
Made in Solingen from finest German steel. Length 27¾"

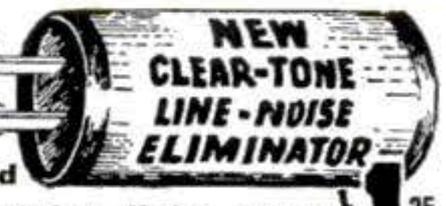
A TREASURE FOR COLLECTORS
Carried in battles of the past. Used also as bayonet on famous 1867 Rolling Block Rifles.

FREE ... if you order now! Handsome black leather scabbard trimmed in shining steel.

Money back guarantee. No C.O.D.'s please.

WINFIELD ARMS CORPORATION
409 East Pico Blvd., Room PS-2, Los Angeles 15, Calif.

Reduce RADIO NOISES



SIMPLY PLUG Radio or Appliance cord into Noise Eliminator and plug into wall socket. Enjoy reception FREE from many distracting noises. Send No Money, pay postman **$1.25** each (**2 for $2.00**) plus postage or send cash and we'll mail postpaid. Try 5 days, money back if not delighted. Many hundreds of satisfied users. Send for yours today.

$1.25 EA 2 for $2.00

MERIT SALES, DEPT. P-27
800 Edmondson Ave. Baltimore 28, Md.

ELECTRONIC WALKIE-TALKIE

3.95

Portable 2-Way Phone System

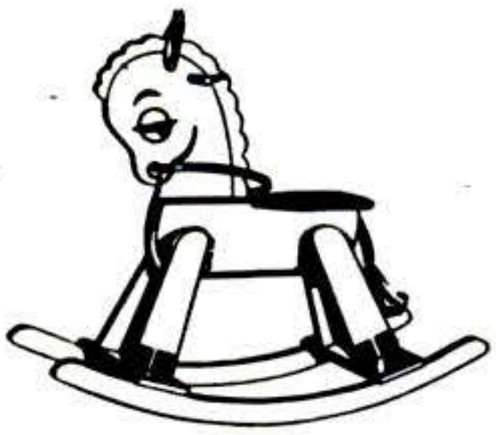
The outstanding results of many years of research in sound powered instruments. Electronic operation does not need batteries or tubes. Completely assembled and ready for immediate use. Perfect for room to room, house to house or long distance communication — no licenses or permits needed. Both phone instruments are completely guaranteed. Send check or M.O., postage paid or C.O.D. plus postage.

HARTLEY SALES • 1225B Broadway • N. Y. C. • •

MAKE TOYS!

Build colorful, sturdy toys *yourself* with actual-size EASI-BILD patterns . . . and finish with amazing Plastic Wood!

Simply trace pattern on wood, saw and assemble! Finishing is easy when you use Plastic Wood! Handles like putty, hardens into wood. Can be molded, carved, sanded.



EASI-BILD ®
PAT. No. 53—35¢

A CELLULOSE FIBRE FILLER

IN CANS OR TUBES

Look for this Easi-Bild pattern #53 at hardware counters everywhere. Or send 35¢ to: Plastic Wood, Box 215, Pleasantville, N. Y.

P.S. Stop hinges from squeaking with just a drop of **3-IN-ONE Oil**

Copyrighted material

STOP Faucet Leaks *for years!*

SNAP-in SWIVEL WASHER

FEATURED IN READER'S DIGEST . .

This amazing faucet washer lasts 10 to 20 times longer that ordinary washers. Patented swivel action allows washer to seat tightly without grinding—practically eliminates wear. Genuine Neoprene face disc. Snaps into faucet stem—no special tools needed. Ask your hardware dealer for Snap-in Swivel Washers. 3 for 69c. Accept no substitute. If dealer cannot supply, send 69c and bibb washer size to Snap Products Co., Division of Harrison Industries, 847 W. Harrison St., Chicago, Ill.

Tremendous Value! Regularly $32.50

MOTOR WORKSHOP *with all the Attachments*

For Home, Farm and Shop

$18.50 F.O.B. FAMOUS NAME BRAND BUY!

Everything you need! A famous name brand outfit that sells for almost twice this price. A complete electrical workshop with all the accessories included. Grinds; Polishes; Buffs; Drills; Drives; hundreds of other uses! We positively GUARANTEE this to be the best buy on the market or your money back. Limited supply. Order now and SAVE! FREE CATALOG.

INCLUDES

- Streamlined, advertised powerful **2 shaft motor.** ¼ horsepower, 110 volts, 1750 RPM, 60 cycles. Rubber mounted for smooth, quiet operation. Will last a lifetime. Completely guaranteed.
- 6" Grinding Wheel
- 6" Cloth Buff Wheel
- ½" Cap. Drill Chuck
- 6 asst. Drill Bits (in case)
- 2" dia. ½" Bore Pulley
- Bar of Rouge
- 8 ft. rubber Cord and Plug

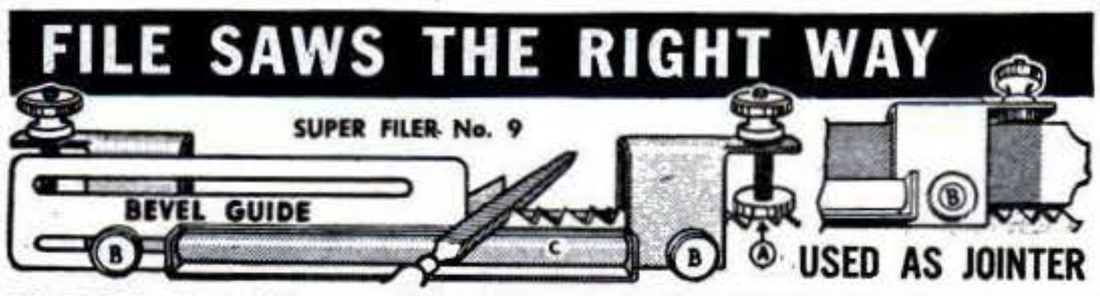
ROBERTS ELECTRIC CO., 849 W. Grand, Dept. 51, Chicago 22, Ill.

TRANSFORMER WELDER $18.95 FOB QUINCY

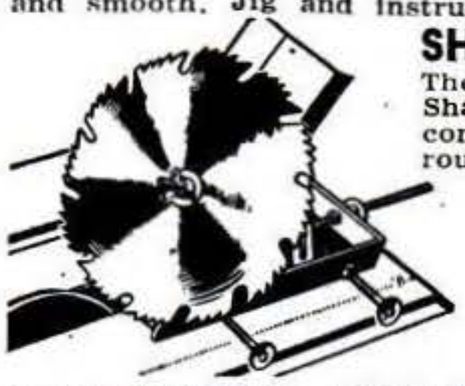
Complete with everything. Ready to plug in. 110 volts A.C., 15-30 amps. 3 heats. Welds metal from 1/16" to ¼" using 1/16" to 3/32" standard rods. Guaranteed unconditionally. 10-day trial. No C.O.D. We also make welder for 16-22 gauge metal, $3.95; ⅛" metal $6.45.

ESSAY MFG. CO., INC., Dept. 47, Quincy 69, Mass.

FILE SAWS THE RIGHT WAY



SO EASY: With this new filing jig and jointer anyone can now sharpen any handsaw like new! When file hits hardened steel rollers teeth are finished and EXACTLY SAME HEIGHT. All teeth cut and saw runs true and smooth. Jig and instructions **$2.95** postpaid. Free literature.

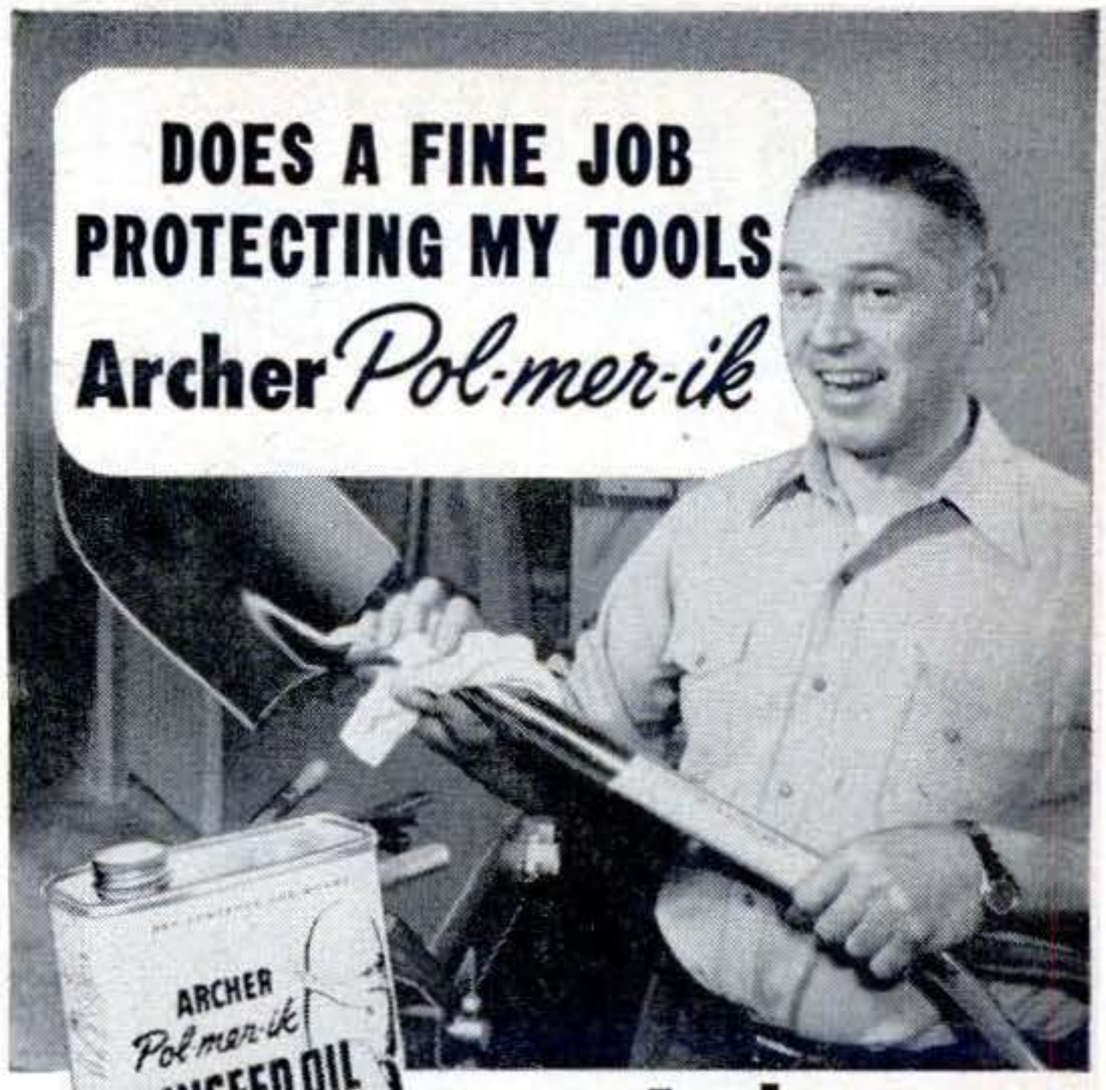


SHARPEN YOUR CIRCULAR SAWS

The RIGHT WAY on your own saw table. Sharpens rip, cutoff, hollow ground and combination blades—6" to 10". Saws stay round with correct bevel. Precision made, easy to use. GUARANTEED. Only **$8.95.** Includes $3.00 Grinding wheel. **"TRU-CIRCLE"** saw set automatically sets teeth at 10° or more **$2.95.**

AT DEALERS OR POSTPAID

A. D. McBURNEY 317 E. 4th St., Los Angeles 13, Calif. Dept. S-26



Archer *Pol-mer-ik* LINSEED OIL

PROTECTS MOST ANYTHING

A few of its 101 HANDY USES:

- Antique refinishing.
- Preserving paint brushes.
- Protecting gun stocks.
- Glazing windows.
- Protecting ladders.

Yes, Archer Pol-mer-ik is a real Handy-Andy oil that saves you time and money by doing the job of a dozen more expensive specialized products. You'll find it's the handiest single product in your house!

FOR PRIMING AND PAINTING

Nothing like Pol-mer-ik

For years Archer Pol-mer-ik has been the choice of professional painters for paint reducing and brush conditioning. Pol-mer-ik is given a special polymerization process which rearranges and locks together the oil molecules. This process gives you a tougher, more durable paint film than ordinary linseed oil. When you reduce your paints with Pol-mer-ik, they brush out easier, level better, have a smoother surface that collects less dirt, and give you a longer-lasting job! Whenever you paint, use Archer Pol-mer-ik Linseed Oil for better results!

FREE! 101 Money-Saving Ideas!

Get your copy today. Shortcuts and pointers from the "pro's" based on practical experience. Free! No obligation—just drop us a card today. ARCHER-DANIELS-MIDLAND CO., 604 Roanoke Building, Minneapolis, Minn.

Copyrighted material

REFINISH OLD FURNITURE in 13 Beautiful New Grains

WITH *Transveneer*

The miracle Plastic Veneer that goes on like a decal to painted, varnished, or unfinished furniture—old or new.

GOES ON ANY SMOOTH SURFACE WHETHER FLAT OR ROUNDED!

Make it look like beautiful modern woods, marbles, or leather. Amazing new plastic veneer "welds" to wood, glass, metal, plastic, plaster, or composition board and can be varnished or waxed like wood. Photographic reproductions of rare woods in natural colors deceive the eye. Used for years to finish fine cabinets, fine furniture, and interiors of costly cars. Now available for home use. Home Craftsmen rave about it. **ACTUAL SAMPLE FREE.** Send name on postcard. Actual sample will be sent postage prepaid with prices, and color chart of patterns available. No charge. Send name today.

TRANSVENEER SALES CO.,
125 W. Hubbard, Dept. TV-32,
Chicago 10, Ill.

YOU CAN CREATE really beautiful, modern pieces from discarded furniture at low cost. Get sample free and see for yourself. Send name, no money. Actual sample is free.

SPECIAL OFFER—Only 10¢
50-Page "Tools and Rules" Book

"The Tools and Rules for Precision Measuring" tells how to make accuracy a habit, shows the methods skilled mechanics use. 100 pictures plus reference tables. Send only one dime. Address Dept. PS.

Only 10¢

THE L. S. STARRETT CO. • ATHOL, MASS., U. S. A.

FASTER THAN $100 ENGINEER INSTRUMENTS!

Packed in husky carrying case
12x11¾x3¼"

Regular 50 Feet **$8.95**

THE NEW, IMPROVED WATER LEVEL FOR SIMPLEST ONE-MAN OPERATION

Deluxe 75 Feet **$12.95** Heavy Case

FOOTINGS
FOUNDATIONS
GRADINGS

Anything you need level LEVELALL does it

LEVELALL
81C Webster Street
Rockland, Mass.

Dealer inquiries invited

LEVELALL
81C Webster St., Rockland, Mass.
Mail me.....Levelall instruments at **$8.95**
Mail me .....DeLuxe Leveall at **$12.95**
you guarantee satisfaction or money back upon return of Levelall within ten days.

Name.....
Address.....
City.....Zone....State.....

☐ Send C.O.D. I will pay postman full purchase price plus delivery charge on arrival.

☐ Full purchase price is enclosed. Send postpaid (Postage prepaid on orders in U.S.A. only.)

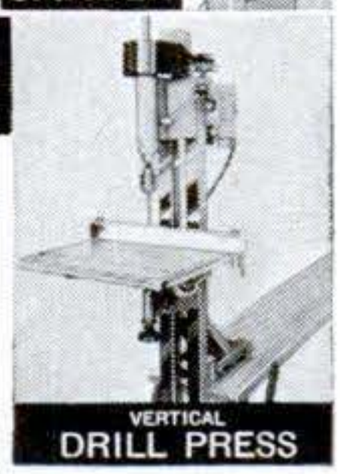
---

5 BIG POWER TOOLS in ONE

RETAIL PRICE $125.00
FACTORY TO YOU $79.95

SUPERSHOP is a PRECISION-BUILT WORKSHOP. 100% ball bearing. **All** running parts precision **ground.** Big capacity. Extra rugged. Amazing **value.** **Write for FREE catalog.**

BUY ON EASY PAYMENTS



POWER TOOLS, INC. 244 YATES AVENUE, BELOIT, WISCONSIN

MARVEL
Mystery Oil

- Frees Sticky Valves
- Stops Hydraulic Valve Clatter

Buy it at your favorite gas station

BANDSAW OWNERS - SAW STEEL & OTHER METALS

Change over your two-wheel bandsaw for wood, plastic, or metals in only two minutes. (Up to 16" wheel diameter) Precision-built gear reducer, self oiling bearings, rigid design with all necessary parts included. State wheel and drive shaft diameter..... **$18.95 P.Pd.**
Finest quality steel cutting bandsaws ¼", ⅜", or ½" widths $.35 per foot. State width and length.
10 DAY MONEY BACK GUARANTEE! CHECK OR MONEY ORDER

RAYLEN PRODUCTS
194 Rivermeadow Drive — Rochester 18, N. Y.

TOOLS AT WHOLESALE

PROFESSIONAL MECHANICS HAND TOOLS
Farm, Household and Special Tools
TOP QUALITY, FACTORY GUARANTEED

Write Today for FREE CATALOG

MECHANICS CO-OP
Dept. W — Oakland 8 Calif

Ball-Bearing SPEED WHEELS

Dealers, Jobbers, and Manufacturers! Our new prices will interest you.

JUVENILE WHEELS (No bearing, solid tires)

4"	40c	6"	65c
5"	45c	7"	75c

(Semi-pneumatic tire, ball bearing)

8 x 1.25	$1.85	10 x 1.25	$2.20
8 x 1.75	1.95	10 x 1.75	2.30
8 x 2	2.20	10 x 2.00	2.65
		12 x 1.75	3.45

INDUSTRIAL WHEELS

Lug Base, Semi-Pneumatic tire

5 x 1.75	$3.65	10 x 2.00	$6.10
6 x 2 SW	3.45	10 x 2.75	5.15
6 x 2.00	4.00	12 x 2.00	6.90
8 x 2.00	5.20	12 x 3.00	9.20
8 x 2.50	5.40	16 x 4.00	15.15

Smooth Base, Pneumatic tire and tube

8 x 3.00	$11.00	12 x 4.00	$12.10
10 x 2.75	6.80	4.00 x 8	13.10
10 x 3.50	10.55	14 x 4.50	13.40

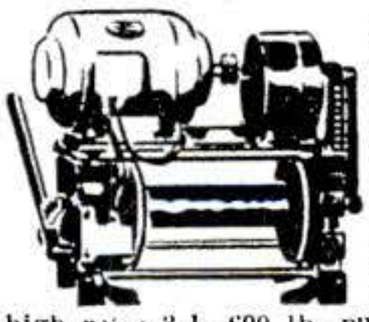
Available Now—CASTERS
Write for circulars on all wheels.
No c.o.d. orders. Prices F.O.B. our plant.

JIM BROWN TOY COMPANY
1093 HOME AVENUE — AKRON 10, OHIO

Copyrighted material

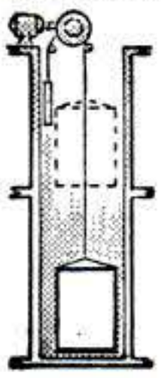
BUY from C&H - you'll save and be sure!

POWER and HAND WINCHES



For—BOATS, TRUCKS, FARMERS, LOGGERS, CONTRACTORS, ETC.

Hand winch, 3-1 ratio, 600 lb. pull, drum has 1⅝" spool, 6" flange, takes 75' of 3/16" cable, stop locking pawl, wgt. 26 lbs. **$16.95**
Ball bearing Hand winch, low ratio 1-1, high ratio 3-1, 600 lb. pull.....**$29.50**
Same as above with bronze worm gear, 12 to 1 ratio and handbrake.....**$39.50**
½ HP electric ball bearing model; compact gear box, 12 rpm drum speed.....**$145.00**
¾ HP, same as above, 3" drum.....**$165.00**
Heavy duty, 10-1 ratio, double drum model with jaw-type clutch, wgt. 280 lbs.....**$49.95**
CABLE, ¼" preformed stainless steel aircraft, 100 ft. or less.....**17c/ft.**
Over 100 ft.....**15c/ft.**



BUILD YOUR OWN INCLINE OR DUMB WAITER ELEVATOR

Get all the convenience of a dumb waiter elevator for store, shop, restaurant and home—or the convenience of an incline elevator on steep lake shores, hills, ravines, etc. at lowest cost. We furnish complete parts. Steel Car—Guide Rails—Worm Gear—Limit Switches—Electrical Control—Steel Cable. SEND 25c for completely diagrammed instructions with list of parts, kits and prices.

ALARM HORNS • SIRENS

Motor driven (not a vibrator). Heavy duty with great power and long life. Adjustable for high, medium or low tone. 110 v. AC current. Weather proof. For alarm or signal horn on boats, school yards, factories, air raid siren, etc. Lists at $47. Our price NEW **$24.95**

BOOSTER FANS to fit any 8" to 12" furnace pipe. 1500 rpm motor, with 6' cord, mounting frame, 6" blade. Motor 110 volt 60 cycle 1550 rpm. Easy to install. Silent operation. Warm those rooms with long runs. List $11.95. Our price **$6.95**
REGISTER FAN for hot or cold air with bracket ready to mount; motor, 6" blade, 6' cord **$7.50**

CLUTCHES For Motor scooters, motor bikes, etc. Centrifugal action enables electric motors or small gas engines to handle heavy starting loads. 3" A belt pulley. NEW. ⅝" bore **$9.95;** ¾" bore **$10.95;** 1" bore **$11.95**
CENTRIFUGAL Ball Throw-out CLUTCH. A or B belt pulley. ¾" bore **$9.00;** 1" bore **$11.00**

BUYS of the MONTH!!

HYDRAULIC CYLINDERS 2½" stroke, 5" dia. Worth $75.00, NEW only.....**$7.95**
2" stroke, 2½" dia., overall length 12". Worth $65.00. NEW only.....**$6.95**
24" FAN SHUTTER for square opening. Worth $18.00, NEW only.....**$6.95**
½ HP "MALL" pedestal grinder complete. Regularly $175.00, NEW only.....**$99.50**
100 ft. Extension Cords; heavy duty type **$4.95**
SMALL 110v. MOTOR, 60 cyl. AC, will take up to 8" blade, ¼" shaft, 3¼" dia...**$3.50**

ELECTRIC HOT WATER HEATER

Heat water faster, easier with this immersion unit. 115-v. AC—1250 watt Westinghouse or Chromolox element. Manual unit, $42 value, $6.95; thermostatic Fenwall control $3.95. Element with Fenwall thermostat, $8.95. 10 gal. steel tanks 12 x 21"—$9.95; 8 x 42"—$11.95. 18' cord = 12/2 or 3 conductor with plug **$2.25**

RUBBER HOSE

Long wearing GOODRICH 2 ply 2" I.D., 25 ft. lengths worth $25. Only **$4.95;** 3 lengths for **$12.00.**

SAVE OVER 50%

ON THESE BRAND NEW WAR SURPLUS POWER UNITS

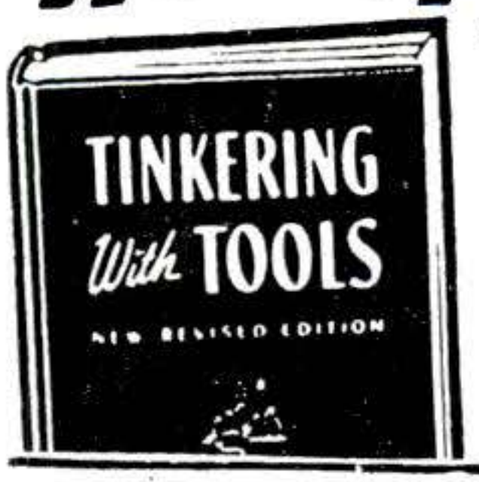
BE PREPARED
for any emergency!

300 WATT 110-220 volt AC, 60 cycle light plant powered by 1 HP gas engine, direct drive, mounted base, wgt. 40 lbs. Ideal for campers, P.A. systems, house trailers, etc. Equipped with handle for easy carrying.....**$99.00**
750-1000 WATT 110 volt AC, powered by Briggs & Stratton gas engine.....**$169.00**
1000-1200 WATT 110 volt AC.....**$194.00**
2000-2500 WATT 110 volt AC, 60 cycle, slow speed generator, 5.10 HP Briggs & Stratton gas engine, NEW..... ... **$294.50**
To make 110-220 add $40, for transformer.
2500-3000 WATT 110 volt AC, 60 cycle, Leland generator—runs at slow speed (1800 r.p.m.) for longer life, 8.25 HP Briggs & Stratton gas engine. You can rely on this plant for all average home needs—freezer, stoker, pump, hot plate, radio, etc. —and overloads from starting motors. Reconditioned and fully guaranteed.....**$295.00.**
NEW **$345.00**
Plants same as above, built in 1951, with tools and spare parts. Lists at $790. Our price **$426.** To make 110-220 add $48 for transformer.
3000 WATT 110-220 volt with push button starter. Starter battery is automatically charged by plant. Gas engine same as in plant above **$465.00**
5000 WATT, 120 volt, 60 cycle AC, Hercules 4 cyl. gas engine, Hobart generator, completely automatic, radio and TV filtered, power cable plug, exhaust pipe and manual. Lists at $1,800. Our price **$795.** Extra parts and tools $25. 150' reel 2-wire #6 rubber cable with connectors $90. 150' reel 3-wire remote control cable & switch $25. Plant complete with parts & 2 reels of cable **$895.** To make plant 110-220 V., add $75 for transformer.
7500 WATT 110 v. AC, 4 cyl. gas engine NEW ..... **$995.**
10,000 WATT 110-220 v. AC. Reconditioned.... **$1195.** NEW .....**$1495.**
25,000 WATT 220 v. AC, 3 phase or 110-220 v. single phase. Reconditioned **$1995.** New **$2495.**
35,000 WATT 110-220 v. AC, Diesel. Rebuilt **$2995**
50,000 WATT 240 v. AC, 3 phase Diesel. NEW .....**$5900.**

ORDER DIRECT from this ad! All prices F.O.B. Milwaukee. 25% deposit required on all C.O.D. orders. No C.O.D.'s under $10.00. Many other bargain items not listed. Write for our FREE CIRCULARS!

C&H ELECTRIC MACHINE Co. Inc.
438p W. Juneau Ave., Milwaukee 3, Wisconsin

HOW TO SAVE MONEY ON *Home Repairs!*



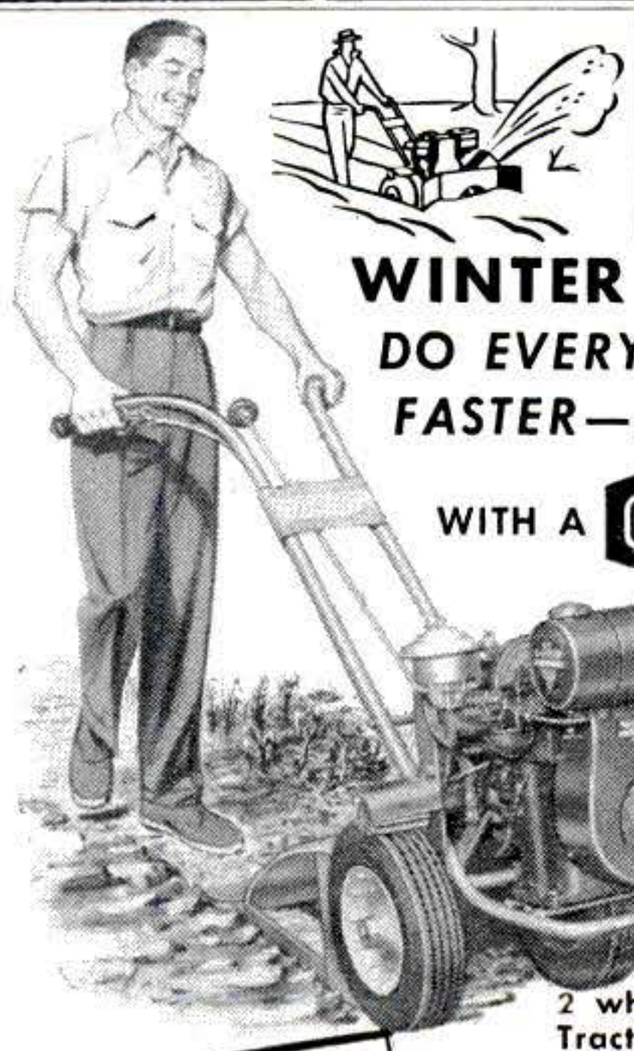
NEW BOOK MAKES IT EASY!

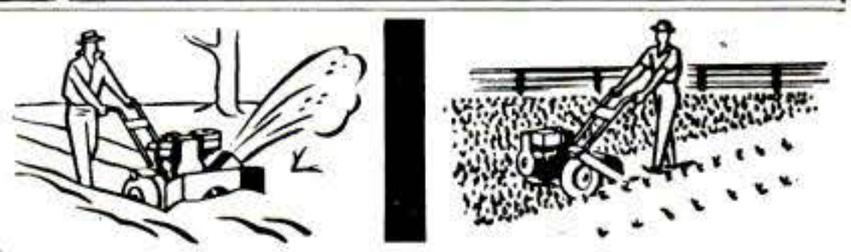
Only $1.49

NOW you can save up to 50% on household repairs if you follow simple instructions in the big new **illustrated** book, *Tinkering With Tools!* Here you'll find everything you need to know about woodworking, shingling, plastering, interior and exterior painting, plumbing, wiring and masonry! In a jiffy you can learn how to repair faucets, valves and traps, electrical appliances, how to refinish floors and furniture, lay sidewalks, panel walls, renew sash cords, stipple walls—hundreds of home repairs so easy to make!
Never before have so many money-saving helps—plus hundreds of pictures—been packed into one big 260-page cloth-bound DeLuxe volume to sell for ONLY $1.49! A book this big should cost $3.50 or more!

SEND NO MONEY—ORDER TODAY

Mail your order now, and pay postman on delivery ONLY $1.49 plus shipping cost. If after 7 days' FREE TRIAL you aren't completely satisfied, return book and we'll gladly refund every cent. Write to:
POPULAR SCIENCE, Dept. 253
353 Fourth Avenue, New York 10, N. Y.





WINTER OR SUMMER

DO EVERY OUTDOOR JOB FASTER—EASIER—BETTER

WITH A GEORGE GARDEN TRACTOR

$119.50
F.O.B. Sullivan, Ill.

Illustrated:
2 wheel, 2 HP GEORGE Garden Tractor, Briggs or Clinton Engine

Your George garden tractor is a multi-purpose, year-round work saver. In price, it compares with a power mower. In use, the George garden tractor is incomparable. Complete range of attachments for tilling gardens... mowing lawns... cutting weeds ... removing snow. A George tractor is ideal for every purse and purpose.

SEND TODAY
Write for free copy of illustrated George garden tool folder. See how a George garden tractor can do every outdoor chore.
George Garden Tool Div.
Box PS-2
Sullivan, Illinois

GEORGE GARDEN TOOL
Div. of Community Industries Ass'n

Copyrighted material

MORE POWER AND ECONOMY

SAVE $$$ Eliminate costly motor overhaul and ring jobs. Save on oil and gas too. YOU can do the job in ten minutes. Just squeeze FISHER'S Compression Seal into your cylinders and this amazing new self-expanding mineral compound will actually fill the worn spots between your cylinder walls and pistons. No more piston slap and noisy engines. Makes your car perform like new up to 15,000 more miles.

CARS • TRUCKS • TRACTORS Makes any gas engine run like NEW. Increases compression up to 126%! Here is what happy users say:

A.F.C., Oklahoma City, "My 1947 Kaiser runs like a 1952."

B.C., Beaverton, Oregon, "Even uphill I now have power to spare."

100% GUARANTEE You can't lose! Lab tests backed by a $100,000 insurance policy guarantee FISHER'S Compression Seal cannot harm the finest engine. Your money back if after you try it you are not completely satisfied.

FREE For Limited Time Only! As a special introductory offer you receive as a gift a professional spark plug kit. Clean and reset your plugs while you have them out. Makes your car run smoother. ONLY $3.95 POSTPAID

DEALER INQUIRIES INVITED

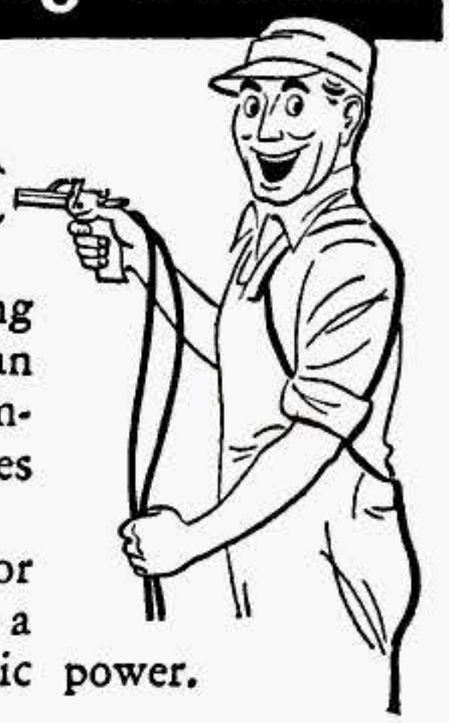
MAIL THIS COUPON TODAY!

CAR-LIFE SUPPLY COMPANY Dept. PS-2
4756 S. Central Ave., Los Angeles 11, Calif.
I enclose $3.95. Please rush me a tube of FISHER'S Compression Seal and my FREE spark plug kit. I may keep the kit even if I decide to return the tube after use.

Name .....
Address .....
City ..... Zone ..... State .....

CAMPBELL-HAUSFELD Spray Painting Outfits

Outperform them all!



DO more and better painting in an hour than you can brush on in a day. Same compressor inflates tires, lubricates cars, tractors, implements.

4 models, precision built for trouble free service. Last a lifetime. Gasoline or electric power.

See them at your dealer or write for literature, giving his name.

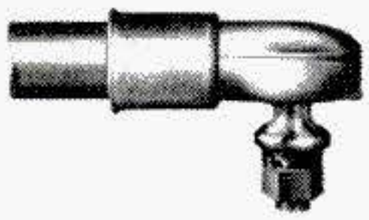
pressure maid

New Low Priced Pressure Maid . . . dwarf in size . . . giant in power.

THE CAMPBELL-HAUSFELD CO.
151 RAILROAD AVE. HARRISON, OHIO

A PERFECT PICTURE OF YOUR BEST BET— BULLDOG COUPLERS!

Model No. 1-C for light-duty trailers, capacity 2500 lbs. 1¾" ball with nut included . . . $6.36 Fed. Tax incl.



Manufacturers of TORQ-LESS AXLES, BULLDOG COUPLERS and BULLDOG FARM JACKS. Write for Brochure 14B on complete line.

HAMMER BLOW TOOL COMPANY
"As old as the Industry"
WAUSAU, WISCONSIN

KING MIDGET

WORLD'S LOWEST PRICED 2 PASSENGER AUTO

JUST OUT—NEW CONVERTIBLE! Operate it for 75c per week. Amazing performance. Surprising comfort. All steel construction. Ready to run or assemble it yourself with our bolt together parts. Rider Agents wanted, earn your car Free. Send 25c for detailed literature or $1 (refunded first order) for actual assembly book and service manual filled with photos, drawings, specifications, etc.

MIDGET MOTORS MFG. CO., ATHENS, OHIO

Make Money **SELLING Eshelman Tractors** and doing **GARDEN WORK**

RAKES
PLOWS
CULTIVATES
HARROWS
HAULS
SPRAYS
SAWS
DOZER
MOWS
CUTS
ROLLS
TILLS
SNOW PLOW

ESHELMAN FOR BETTER LAWNS and GARDENS

Also Power Reverse. Women Can Operate It. Free Catalog. Write nearest branch:—
ESHELMAN CO. Dept. 42
119 Light S., Balto. 2, Md.
333 N. Michigan Ave., Chicago-1, Ill.
105 Lake St., Reno, Nev.

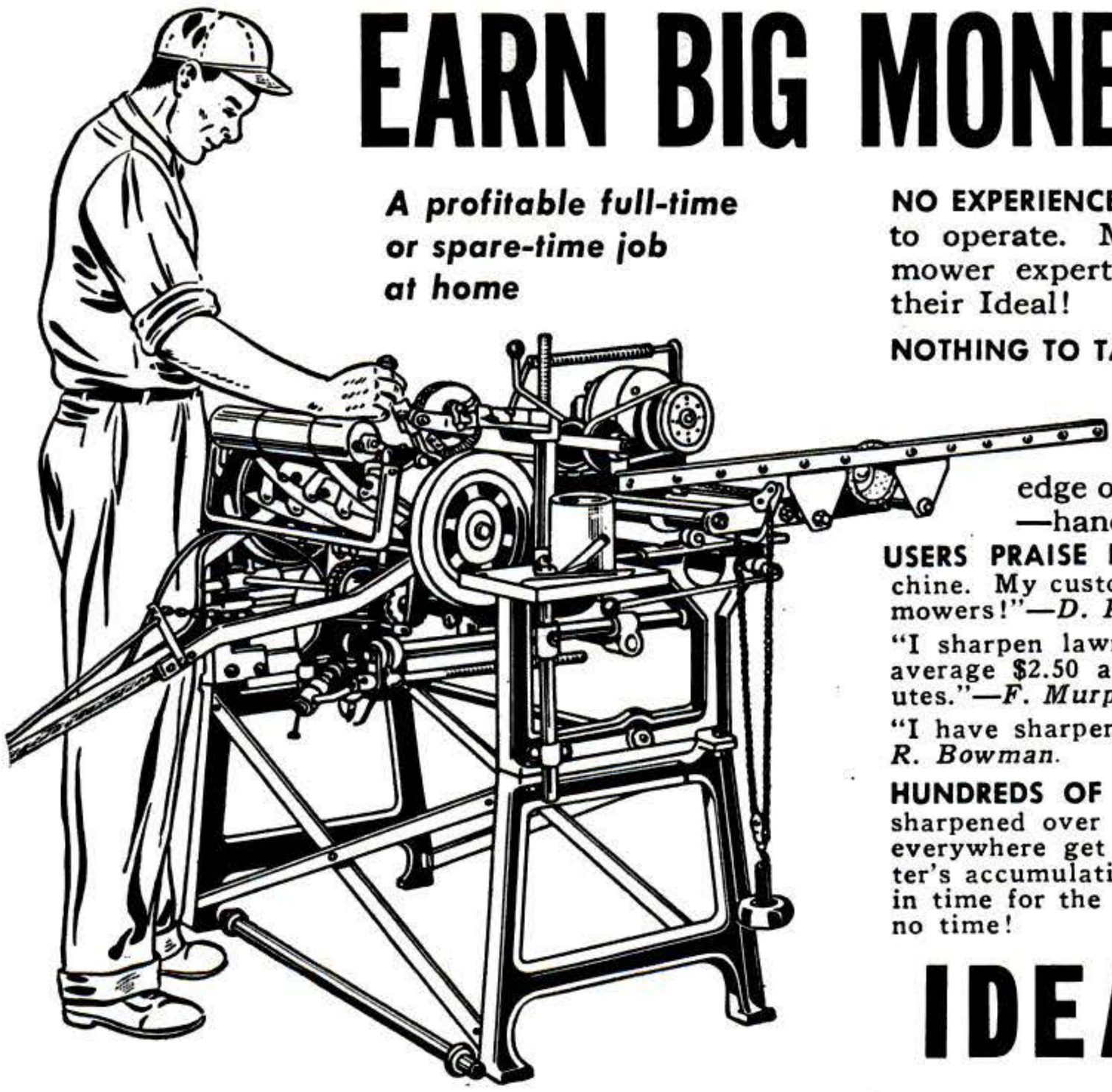
Make lasting Metal Repairs

WITH →

FREE: "Soldering Simplified." 16 page illustrated booklet. Get your copy now.

Kester Solder Company
4254 Wrightwood Ave.
Chicago 39, Illinois

EARN BIG MONEY GRINDING LAWNMOWERS



A profitable full-time or spare-time job at home

NO EXPERIENCE NEEDED—Simple to set up—easy to operate. Many have sharpened their first mower expertly just minutes after unpacking their Ideal!

NOTHING TO TAKE APART—No need to disassemble the mower if you use an Ideal. Put the whole mower in the machine to get a razor sharp edge on bed knife and reel of any mower —hand or power.

USERS PRAISE IT "I have only praise for your machine. My customers think I am a wizard at grinding mowers!"—*D. Pemberton.*

"I sharpen lawnmowers only in my spare time and average $2.50 an hour. I sharpened one in 16 minutes."—*F. Murphy.*

"I have sharpened 229 mowers and made $602.20."—*R. Bowman.*

HUNDREDS OF DULL MOWERS Ideal users have sharpened over a thousand mowers a year. Mowers everywhere get dull through normal use and a winter's accumulation of rust . . . Get your Ideal NOW in time for the Spring rush. It will pay for itself in no time!

IDEAL LAWNMOWER SHARPENER

Our 51st Year

For FREE Catalog Write to: **THE FATE-ROOT-HEATH CO., Dept. PS-2, Plymouth, Ohio**

Tighten Loose Handles

TO STAY

Use the "repairman's standby"—Smooth-On No. 1 Iron Cement — to anchor loose tool and cutlery handles, knobs, pulls, casters, clothes-hooks, bolts, screws, etc. You apply it like putty —no heat required. It hardens like metal. And because Smooth-On expands slightly as it sets, your repairs *stay tight.* Buy Smooth-On No. 1 in 1¾-oz., 7-oz. or 1-lb. and larger sizes at your hardware store. If they haven't it, write us.

FREE Repair Ideas

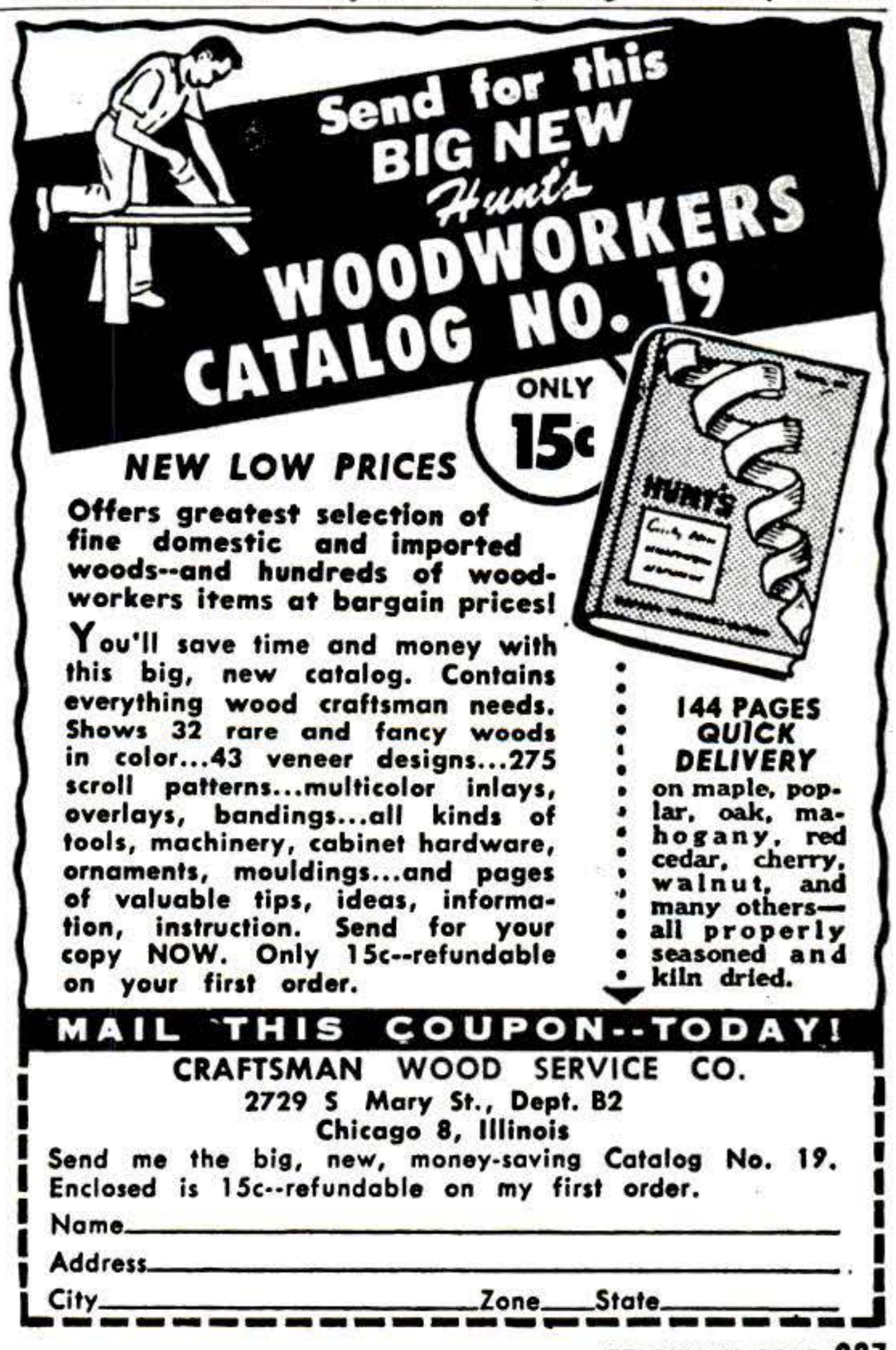
40 pages of time-saving, money-saving ways to stop leaks, seal cracks, tighten loose parts. 170 illustrations. Clear, simple directions. Send now.

SMOOTH-ON MFG. CO., Dept. 58B,
570 Communipaw Ave., Jersey City 4, N. J.

Do it with

SMOOTH-ON

THE IRON REPAIR CEMENT OF MANY USES



NEW LOW PRICES

Offers greatest selection of fine domestic and imported woods--and hundreds of woodworkers items at bargain prices!

You'll save time and money with this big, new catalog. Contains everything wood craftsman needs. Shows 32 rare and fancy woods in color...43 veneer designs...275 scroll patterns...multicolor inlays, overlays, bandings...all kinds of tools, machinery, cabinet hardware, ornaments, mouldings...and pages of valuable tips, ideas, information, instruction. Send for your copy NOW. Only 15c--refundable on your first order.

144 PAGES
QUICK DELIVERY
on maple, poplar, oak, mahogany, red cedar, cherry, walnut, and many others—all properly seasoned and kiln dried.

MAIL THIS COUPON--TODAY!

CRAFTSMAN WOOD SERVICE CO.
2729 S Mary St., Dept. B2
Chicago 8, Illinois

Send me the big, new, money-saving Catalog No. 19. Enclosed is 15c--refundable on my first order.

Name_____
Address_____
City_____ Zone____ State_____

Copyrighted material

own your own business! earn up to

$75 A DAY CLEAR PROFIT

in your back yard or basement!

MAKE CONCRETE BLOCKS With Amazing New LOW PRICED GENERAL BLOCK MACHINE

NOW! Big Building Boom Profits Within *Your* Reach

You don't need much cash to cash in on the building boom! New high speed, low cost General Block Machine produces up to 1,000 concrete blocks a day for homes, factories, buildings, garages. Your profit mark-up is 100% to 150%! Fool-proof, easily operated, sturdy steel machine can make any size from 4" to 12". These superior 3-core blocks meet all building code requirements for foundation, chimney, corner, sash and many other types of blocks. Works indoors or out. Sand, cement and water available anywhere! Simple operating instructions and mixing formulae for cement and cinder blocks supplied FREE. Get full details, no obligation!

EXTRA!

Amazing illustrated book gives floor plans for 6 sensational concrete block bungalows. Tells how to lay blocks, lay out building lines, mix concrete, build steps, porch and concrete floors all at great savings. Written by experts. Can save many times the cost of the machine! Get it now! No strings attached.

"GENERAL" BLOCK MACHINE
Thousands Now In Use The World Over!
Only $218 less motor f.o.b. plant. Ship. wt. 400 lbs.
PAY AS YOU EARN!
small down payment
MONTHLY PAYMENTS as low as 28.33
Write Now for FREE Details

HOW TO BUILD YOUR OWN CONCRETE BLOCK HOME
Only 1 Prepaid

SEND $1 — Refunded if you buy machine!

GENERAL ENGINES COMPANY
Dept. S-23, 307 HUNTER STREET, GLOUCESTER, N. J.

HOW MANY TOOLS DOES A HANDYMAN NEED?

HERE'S A WHOLE TOOL KIT IN ONE TOOL!

No. 10-W
$2.60

VISE-GRIP WRENCH

You need fewer tools, get far more done, when you use a Vise-Grip Wrench! Locks to any size work with **Ton-Grip.** Won't slip! Turns, twists, pulls, bends, holds, ratchets, cuts. A Super-Pliers, Locking Wrench, Toggle Press, and many more — in 1 trim tool! 7" and 10", only $1.85 to $2.60, at your dealer.

Manufactured Only By

PETERSEN MFG. CO., Dept. P-2, DeWitt, Nebr.

WELD-BRAZE CUT-SOLDER

4 Ways to Handle 1001 Repairs Around Home-Garage-Garden

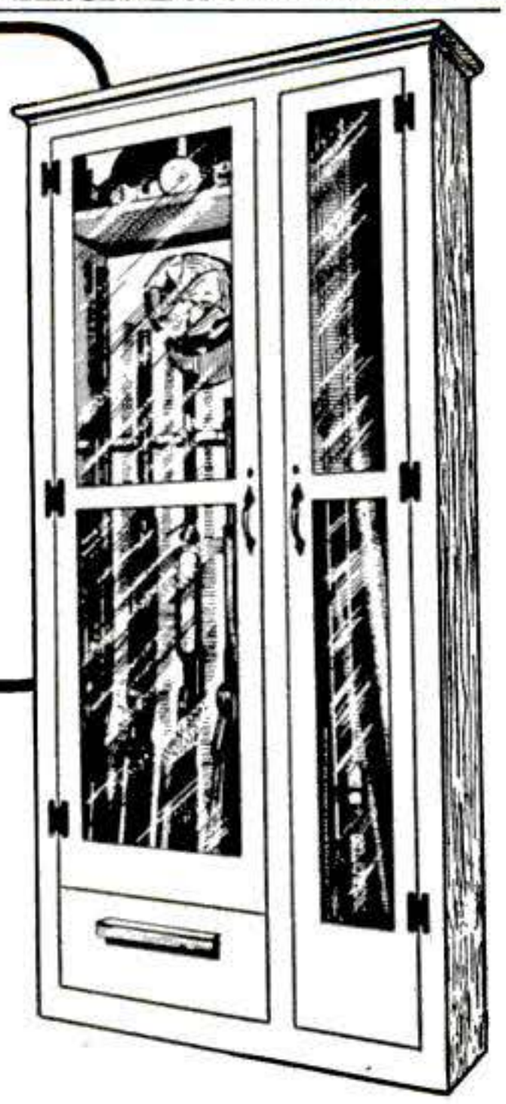
Complete welder with Twin Carbon Arc Torch and all operating accessories to do all types of metalcraft work. Easy instructions for work on iron, steel, bronze, brass and aluminum. Plugs into any properly wired AC or DC line Low cost pays for itself in money saved and earned A wonderful practical Gift of a lifetime. Order now!

only **$14.75**
f.o.b. factory
Larger Models Available on request.

FOUR WAY WELDER CO.
2326 S. Michigan Ave.
Chicago 16, Ill. Dept. F3-BD

4 way welder
Yours on a money back
10 DAY TRIAL

Rod & Gun Cabinet is Easy to Build!



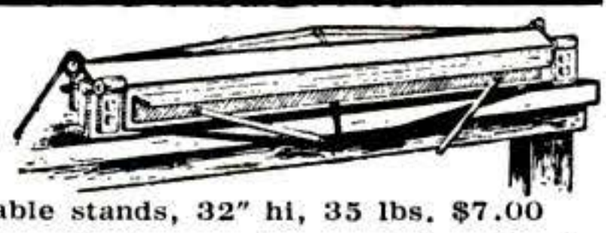
Easi-Bild* pattern No. 130 makes it simple as A-B-C to build this "English squire" hobby cabinet of handsome Weldwood® Plywood in oak or walnut. No special skill or tools needed. Pat. No. 130—50¢.

You'll be proud of this "gun room" cabinet. Display trophies; store skis, rackets, bats, rods, guns. And have a "picnic" making it. *Trade Mark, Easi-Bild Pattern Co.

SEND 50¢ IN CASH OR MONEY ORDER FOR ROD AND GUN CABINET PATTERN NO. 130 TO:

UNITED STATES PLYWOOD CORPORATION
World's Largest Plywood Organization
Pattern Dept., P. O. Box 215, Pleasantville, N. Y.

SHEET METAL BRAKES



Angles, flanges, Pittsburgh locks. 24 G. steel, heavier aluminum. Cam locking, mount on bench, truck or floor stand. Truss braced steel. Express collect, 30", 65 lbs. $28.50. 36", 75 lbs. $33.00. 48", 100 lbs. $48.00. Portable stands, 32" hi, 35 lbs. $7.00

IRON BENDER

IRON BENDER forms hooks, angles, eyelets, etc. Capacity ¼x2", 5/16x1½", 10 parts, all steel. Express Collect..... **$9.50**

30" CURVE FORMER. Forms straight and tapering pipes 2" to 2 ft. dia. 16 Gauge. Express collect. **$10.50**

(Immediate delivery. Order direct, cash or C.O.D., or send for folder.)

VYKE BRAKE CO., S-3016 Leavenworth, Omaha 5, Nebr.

ROTO-HOE

GARDEN TOOLS

2 h. p. (as shown) only $134.

Useful All Year Around
Complete Interchangeability

America's Most Usable Garden Tool

ORIGINATORS OF:

1. Tiller on front for easiest maneuverability.
2. "Soil-O-Matic" Drive—power on rotors only—easy operating.
3. Interchangeable Roto-Cutter.
4. Bolt-on weed clips for varying soil conditions.
5. Complete machine for $134.—no increase in 7 years!

Here's the complete garden tool—Tills, Cultivates, Composts—portable power unit. Powerful Lauson 2 h.p. gasoline engine drives 15 hardened teeth at high speed fine-mixing soil 6" deep; makes gardening EASY; many low cost attachments do EXTRA jobs—mow, trim lawn; mulch, edge, spray, move snow.

FREE folder in colors gives full details. Write today; see dealer for demonstration.

ROTO-HOE & Sprayer Co., Box 18, Newbury, Ohio

Copyrighted material

GIGANTIC SAVE-TO-70% MAIL SALE

WAR SURPLUS EXCESS INVENTORY BANKRUPT STOCK

BURDEN PAYS ALL SHIPPING CHARGES

POWER PLANTS and GENERATORS

- **Master Plants,** 5KW, 115-230-v, 60-c, 4-cyl. engine, manual start. Cost over $1100.....**$531.70**
- **Onan Plants.** 5KW, 115-v, 60-c, 4-cyl., push button start. Cost $1400.00 .....**$689.**
- **Onan Plants.** 1 KW, 115-v, 60-c. Full automatic start-stop. Cost over $500.00....**$291.50**
- **Burdex Plants,** 2KW, 115-v, 60-c..**$279.50**
- **Homelite Plants.** 1.5KW, 115-v, 60-c **$199**
- **Kato Generators.** 5KW, 115-v, 60-c, with control panel, drive pulley, etc. 1800 RPM. 1 phase. Cost $550 .....**$259.50**
- **Generators.** 115-v, 60-c. Ball bearing. 500-w. **$94.50;** 1000-w, **$99.50;** 2000-w, **$138.40**

Write for Power Plant Catalog

Winches - Hoists - Blocks

- **Boat,** dock, business hand winch, 1-4 gear ratio. Special....**$19.95**
- **Farm - Truck - Contractor** heavy duty hand winch. Dual ratio 1-3, 1-9. Finest cast steel construction. Special **$29.98**
- **Chain Hoist.** Lever type. 3000 lb. **$19.48**
- **Truck Crane-Winch.** Mounts on trucks and pick-ups. Special **$84.60**
- **Winch Cable.** 1/4" super-flexible (4000 lbs. cap.) 50' with load hook.....**$9.90**
- **Army Snatch Block.** 13,000 lb. **$12.95**
- **$165 Airplane Winch.** Beautifully made **$17.49** Requires reducing gear. Sale **$17.49**

HYDRAULIC BARGAINS

Build your own loaders, diggers, presses, plow lifts, etc. Lowest prices. Savings to 80%.

Pump, 1000 lbs., 12 g.p.m., 400 r.p.m. **$45.50**

Cylinder, 2 3/8" bore, 19" stroke, 9000 lb. lift. List $91.50. .....**$18.49**

Cylinder, 2" bore, 10" stroke, 3141 lb. lift. Sale **$16.50**

Control Valve, For single or double acting cylinders. Sale **$17.98**

Pressure Gauges, 1000 lb., 1500 lb., 2000 lb. **$3.49**

Write for Hydraulic Data-Catalog.

WATER PUMPS and SYSTEMS

Save up to 60%. Ask us for expert advice on your problem. Pumps for wells, basements, weed spraying, septic tanks, garden irrigation, etc.

- **Centrifugal Pumps.** Cast iron, stainless steel shaft, bronze impeller, ball bearings. No. 75, 3/4", **$18.90;** No. 100, 1", **$28.90;** No. 150, 1 1/2", **$35.60.**
- **Bronze Rotary Pumps.** *Low pressure* (25 lbs. max.) Self priming. No. 12, 1/2".....**$12.75;** No. 34, 3/4", **$16.95;** No. 101, 1", **$22.95;** *Hi-Pressure type* (150 lbs. max.) No. 612, 1/2" **$14.50;** No. 634, 3/4", **$20.95;** No. 610, 1", **$27.95.**
- **Irrigation War Surplus Pump.** 10,000 g.p.h. 2 1/2" intake. Two 1 3/4" outlets, Special....**$39.50**
- **Burdex Shallow Well System.** 110-volt, 60-c, 300 g.p.h. 40 lbs. pressure, fully automatic. Easy to install.....**$69.50**
- **Adj. Auto Pressure Switch, $4.95;** 3/4" foot valve, **$2.49;** pressure gauge 0-60 lbs. **$1.89;** also hose, strainers, etc. at real savings.
- **Hand Pump.** Lever type, high capacity, Pump basements, tanks on farms, etc. Cost $35. **$27.80**

Write for useful Water Pump Data-Catalog

NAVY WEATHER BUREAU THERMOMETER

Shows outside temperature on large 5" easy-to-read indoor dial. Flexible 5' tube connects to outside brass element. -40° to 120° F. Wonderful for factory, home, etc. Original cost $49.50. SALE, **$9.85**

SUPER CLOSEOUT BARGAINS

- **Immersion Heater,** 750-W.....**$3.89**
- **Tractor Weed Spray Outfit**.....**$84.50**
- **Electric Drills** (1/2" finest).....**$29.95**
- **Dial** (3 1/2") **Thermometer** (mantel)..**$1.49**
- **Garden Tractors** (2 h.p.).....**$119.50**
- **Snow Blower** for above tractor.....**$29.50**
- **Flexible Shaft** (40") with chuck.....**$3.95**
- **Finest Gas Chain Saw** ($325).....**$279.50**
- **Plane Propellers** (7' 6") ($151).....**$12.95**
- **Search Lamp Bulbs** 4,800,000 C.P. output! 24-volt (6 for **$7.49**) 110-volt **$1.95**

SPECIAL FOR THE MONTH

War Surplus

GUY CABLE and TURNBUCKLE

New 12' 1/8" flexible steel cable with 14" turnbuckle. Guy, strengthen gates, fences, television towers. Gov't. cost, $1.10 each. 10—**$3.89,** 50—**$16.47,** Case of 120, **$29.89.**

AIR COMPRESSOR UNITS

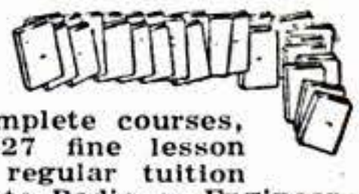
Paint, blow up tires, control termites, clean greasy engines, blow dust, etc. Build your own or buy ready-built units.

- **DeLuxe Air Kit.** Consists stainless tank 12"x24", finest 1-cyl. 3 cfm piston compressor, valves, gauge, fittings, hose, excellent paint gun, blow gun, pressure regulator, chuck and "How To Build Portable Outfit." Special **$45.49**
- **Economy Air Kit.** Same as above except 6"x24" tank and no regulator or paint gun. Each.....**$31.90**

- **Air Components.** Top quality. 1-cyl. piston comp. **$20.50;** 2-cyl. pis. comp. **$49.50;** Adj. Auto. pressure switch, **$4.95;** pressure regulator, **$2.65;** Adj. safety valve, **$1.95;** Pressure gauges, 0-160 lbs. **$1.89.**
- **Air Operated Power Grease Gun...$23.95**

Write for interesting Air Data-Catalog

CORRESPONDENCE SCHOOL BARGAIN



- Lincoln Engineering School closes because of high operating costs. We offer limited quantity of complete courses, Radio or Electrical (27 fine lesson texts) at fraction of regular tuition rate. Deal #1, Complete Radio or Engineering Course Texts, **$5.95.** Deal #2, Combined Radio and Electrical Course Texts, **$9.95**

ORDER FROM AD, or Write for 4 FREE Catalogs!

OUR 30-YEAR POLICY: • Everything Guaranteed Satisfactory • We Pay Shipping Charges in U.S.

FREE CATALOG

BURDEN SALES COMPANY

824 "O" ST. LINCOLN, NEBRASKA

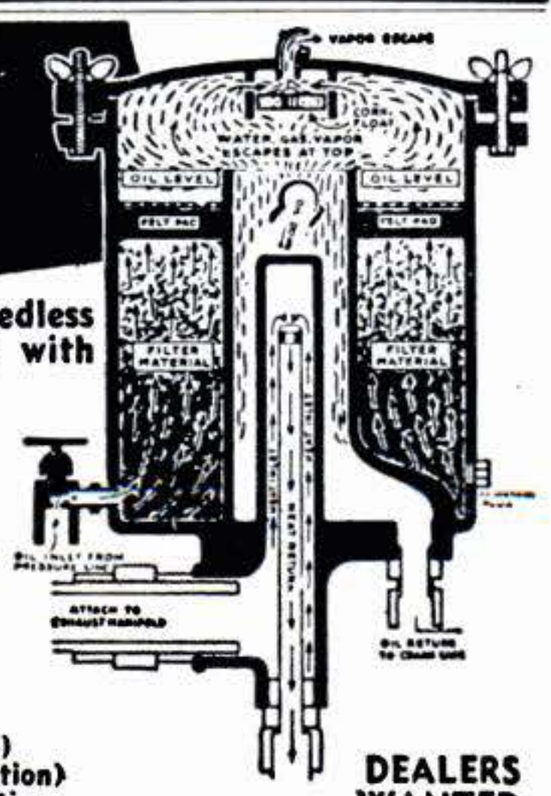
SUPER DRILL GRINDER

Sharpens round shank drills from 3/32" to 1/2" in diameter, up to 6" long. Grinds old drills like new in 4 different point angles, using hand or power grinding wheels. Money-back guarantee, only **$2.95**

At Dealers or Postpaid

A.D.McBURNEY 317 E. 4th St., Dept. S-26 Los Angeles 13, California

STOP CHANGING MOTOR OIL!



End this needless expense forever with

RECLAIMO Today's Most Advanced OIL RE-REFINING filter FOR CARS, TRUCKS, TRACTORS

Continuously cleans and REFINES motor oil as you drive by utilizing motor heat — keeps oil in high grade lubricating condition at all times.

"RECLAIMO"
- REMOVES SOLIDS (by filtration)
- REMOVES WATER (by distillation)
- PREVENTS Excess Fuel Dilution
- PREVENTS Acid and Sludge Formation
- ADDS Thousands of Miles to Engine Life

MAINTAINS Stable Viscosity **ELIMINATES** All Oil Changes

Send for Free Vital 32-page book "OIL FACTS" (with bona-fide $1,000.00 offer on page 30). Gives you complete "Reclaimo" story and details of our extraordinary 90 DAY NO-RISK TRIAL OFFER.

DEALERS WANTED

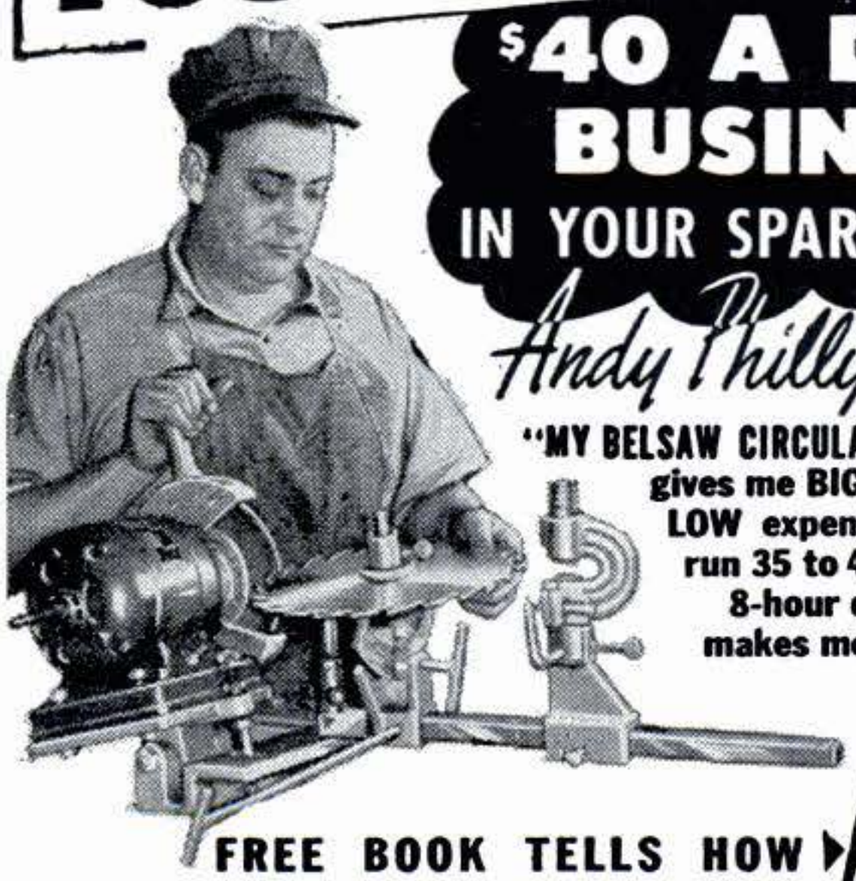
U.S. BUREAU OF STANDARDS, Bul. 86 States, "Oil does not wear out - mechanically."

RECLAIMO MFG. CO., INC.

5083 Elston Avenue Dept. P-2 Chicago 30, Illinois

Wm. Schwalge, U.S. Pats. 1757223, 1834654, 2068473.

YOU CAN START A $40 A DAY BUSINESS IN YOUR SPARE TIME!



Andy Phillips says:

"MY BELSAW CIRCULAR SAW SHOP gives me BIG PROFITS at LOW expense . . . I can run 35 to 40 saws in an 8-hour day . . . That makes me $40 cash."

FREE BOOK TELLS HOW

LIFE-TIME SECURITY WITH YOUR OWN BUSINESS

You can start this REPEAT CASH business in your own home or garage, while you are working at your regular job. Easy to operate, no experience needed. "Pays for itself from just 65 saw jobs."—*Harvey Jensen.*

For as little as $15 down payment, you can get your BELSAW CIRCULAR SAW SHOP rushed to you.

You can make $4 to $5 an hour in your SPARE TIME sharpening and setting CIRCULAR SAWS for builders, lumber yards, factories...No *Extra* Equipment needed, no canvassing. Send postcard today for your *Free* copy of "Life Time Security."

BELSAW MACHINERY CO

4405 Field Building Kansas City 11, Mo.

Copyrighted material

Get Plans for only 10¢

for this versatile DESK-CHEST

HERE'S a really versatile piece of furniture. Use it as a desk, vanity or buffet. Smart styling makes it at home wherever used. And Douglas fir plywood makes the building easy. Real wood panels are easy to cut, fit, fasten and finish. Get plans from your lumber dealer or send 10c to Douglas Fir Plywood Assn., Dept. J-2, Tacoma, Wn.

Douglas Fir Plywood

Lumber dealers now have new small-size Handy Panels in self-service racks. Easy-to-use Handy Panels are quality-tested, grademarked Douglas fir plywood.

---

the ORIGINAL! WHIZ SAW

The All Purpose Cutting Tool

Precision Made for Precision Work

Home craftsmen will find Whiz Saw useful for rough cutting jobs as well as precision work. ACCEPT NO SUBSTITUTE . . . the original WHIZ SAW is one of the most versatile cutting tools ever invented. It cuts with amazing speed wood, bone, plastic fibre, pressed wood, hard rubber, etc. up to 1" thicknesses . . . it's scientifically designed for cutting inside shapes without first boring a starting hole. Ideal for jig or band saw use when inserted in handy WHIZ SAW table.

Whiz Saw #2 has greater capacity, cuts up to 2" thickness, $130.00. Whirl Saw, a 4½" circular blade, cuts up to 1¾" thickness, $49.00.

If not available at your dealers, write to: The Forsberg Mfg. Co., Bridgeport, Conn. U.S.A.

WHIZ-SAW $5500
Table $18.95

7 saws in 1
RIP, CROSSCUT, KEY-HOLE, COPING, SCROLL, BAND OR JIG

the ideal cutting tool for:
HOBBYISTS
ELECTRICIANS
CARPENTERS
PLUMBERS
SIGN-MAKERS
MAINTENANCE MEN

All-metal Whiz-Saw table may be secured with screws to wood bench or held in vise.

ANOTHER *Forsberg* PRODUCT
Makers of the Famous Whale & Viking Tools

AIRPLANE WHEEL ASSEMBLIES

These wheel assemblies are all new, and of heavy duty construction. Depending on load desired to carry, they are ideal for House Movers, Farms, Trailers, Carts, Wheelbarrows, etc.

Complete with Wheel, Tire, Tube and Bearings

26:00 23:00 17:00 5:00x4 10½x4

Size 26:00, 10 ply tire, smooth tread, uses tapered axle size 3 in. x 2½ in. 10½ in. wide. Overall height 26 in. Static Load 6,300 lbs. **Weight 54 lbs.. Price $47.50 ea.**

Size 23:00, 8 ply, smooth tread. This size complete with axle. Overall height 22 in., axle width 10 in. Static Load 4,700 lbs. **Weight 70 lbs.. Price $37.50 ea.**

Size 6 x 2½, solid rubber tire, heavy duty roller bearing, 6" high, 2½" wide, 1" straight axle, static load 500 lbs. **Weight 4 lbs. Price $3.50 ea.**

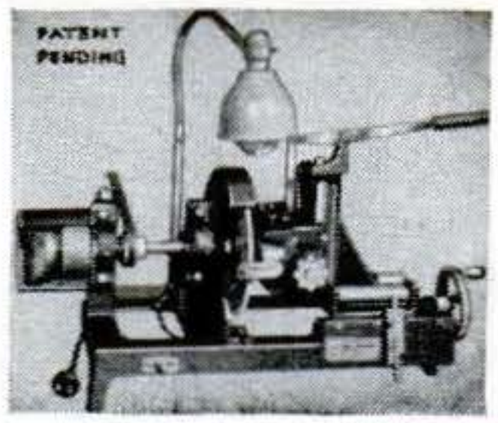
Size 17:00, 6 ply, smooth tread. Uses tapered axle, size 2 in. x 1¾ in. 8 in. wide. Overall height 17 in. Static Load 2,000 lbs. **Weight 18 lbs.. Price $17.50 ea.**

Size 5:00 x 4, 6 ply, smooth tread. Uses straight ⅝ in. axle. 3¼ in. wide. Overall height 13 in. Static Load 1,800 lbs. **Weight 8 lbs.. Price $12.50 ea.**

Size 10½ x 4, 6 ply ribbed tire. Uses straight ⅝ in. axle. 3¼ in. wide. Overall height 10½ in. Static Load 1,200 lbs. **Weight 8.lbs.. Price $9.95 ea.**

Prices F.O.B. Chicago. Include approx. postage on orders paid for in advance. C.O.D. orders enclose 25%, balance sent C.O.D.

U. A. S. Corp. Dept. PS-2, 5637 W. 63rd Pl. Chicago, Ill.



Start a NEW BUSINESS!

or Add to your present Repair Business

SHARPEN DULL PIPE WRENCHES

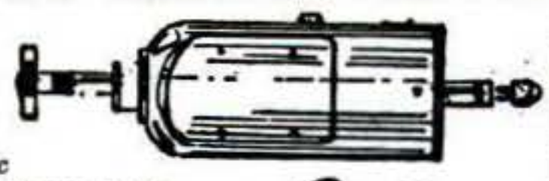
PIPE TAPS & DIES
"GUM" CIRCULAR SAWS

Write for Information

J. C. MOORE INDUSTRIES
BOX S 276, Fredonia, Pa.

1/60 HP, 3600 RPM, 1 Amp, 115V Motor *with 21 Accessories*
used, in excellent condition

Reg. $20.00 **NOW 6.50**



Pack. & Hand. 50c
Over 150 mi. from NYC 75c

4 Jaw Precision chuck, Heavy Brass stone chuck, 2" Grinding Wheel, 1½" Hard Felt Wheel, 5 Mandrels, Circular Saw, Felt Wheel, Rubber Wheel, Arbor Band, 2 Large Burs, 2 Small Burs, 2 Mounted Stones and Polishing Brush.

Dental Research & Sales Co., Inc. 291-7 Essex St., Dept. SA, B'klyn 8, N. Y.

VIKING SUBURBANITE Garden Tractor and Power Mower

Cultivates Narrowest Rows

A practical, low priced, one wheel Tractor for Cultivating, Mowing and other jobs—Patented Engine-in-Wheel Construction. Well Balanced. Also complete line of Two Wheel Tractors.

Catalog Free

Write Today **EASY TERMS**

AMERICAN FARM MACHINERY CO.
1172 33rd Avenue S. E. Minneapolis, Minnesota

"WOVEN-Gards"

BETTER HAND PROTECTION at Amazing Low Cost

"Woven-Gards" are hand protectors, mitts, pads, sleeves and aprons made of a new long-wearing safety material. Provide flexibility, comfort, resistance to abrasion and cutting far beyond anything used before. Extremely oil-absorbent, excellent for handling oily, slippery sheets. Porous weave makes them one of the finest protectors for handling lower temperatures. Enthusiastic users say they have never seen values like "Woven-Gards." Excellent protection at lowest cost. Send now for descriptive folder and prices.

INDUSTRIAL GLOVES COMPANY
A Corporation
1421 Garfield St., Danville, Ill.
(In Canada: Safety Supply Co., Toronto.)

To be Sure of the Genuine Demand This Trade Mark

Copyrighted material

¾ INCH WIDE MEASURES **WHITE BLADE 10 FEET UP**

Handy for all your measuring, the new BIG CHIEF is especially designed for extended overhead and reach-in measurements. The extra rigid ¾-inch wide blade extends farther horizontally, and a full 10 feet overhead without buckling. Easy-to-read white blade is graduated in feet and inches.

EXTRA RIGIDITY

- Double graduations feet and inches
- Ten second blade change
- Easy-action swing-tip
- Easy-to-read crackproof white blade

AT YOUR HARDWARE DEALER TODAY

Produced under patents 2089209, 2510939

CARLSON

CARLSON & SULLIVAN, INC.
MONROVIA, CALIFORNIA

The QUICK-WAY to SHARPEN CIRCULAR SAWS

The complete sharpener, featured in FORTUNE and other leading magazines. Anyone can use . . guarantees precise grinding and spacing of teeth. Operates on your own power table. Complete with patented Index Plate, facing block for mitre and $3.00 grinding wheel—no extras needed. Sharpens circular saws up to 12" diameter. Saves time and money.

Send check, cash or money order. We pay postage.

Model 6-12P
$16.50 *Postpaid*

QUICK-WAY Saw Company
13 Riverside Corning, N.Y.

CARBURETOR TOO RICH
MAKES MOTORIST TOO POOR

Car owners who are wasting money, getting poor gas mileage due to over-rich mixtures, will be pleased to learn how to save gasoline by **VACU-MATING OVER-RICH MIXTURES.** Vacu-Matic fits all cars, trucks and tractors. *Automatic* and operates on the supercharge principle. Easily installed in a few minutes.

SALESMEN WANTED! Big Profits

For FREE particulars, how you can install one on your own car for introducing, just send your name and address on a postcard to VACU-MATIC, 7617-1996 W. State St., WAUWATOSA, WIS.

MODERN
LAWN MOWER SHARPENER

Service departments of leading Lawn Mower manufacturers use the Modern Lawn Mower Sharpener. One lever moves lawn mower into grinding position. Gasoline and oil remain in engine while sharpening, no dismantling of wheels, roller or handle. The Modern is a precision bed knife grinder—no extra grinder to buy. Imitated but never equaled—Compare before you buy.

If it isn't a Modern it can't be Modern

(Prices subject to change without notice)

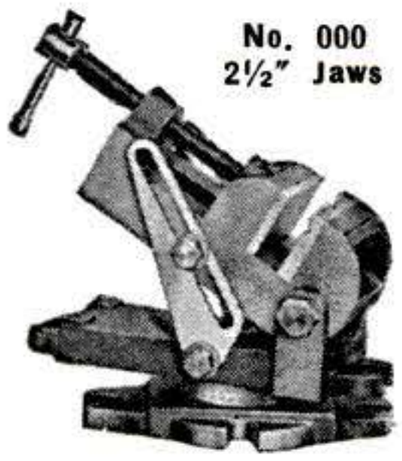
WRITE FOR FREE BOOKLET 11D

$263.00 with motor F.O.B. PASADENA

MODERN MFG. CO.
160 N. Fair Oaks - Pasadena 1, Calif.

PALMGREN
HOBB-E TOOLS

ANGLE VISE

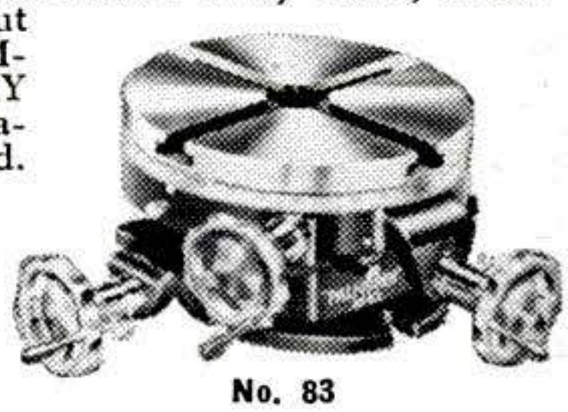


No. 000
2½" Jaws

Set up hard angle jobs in 5 seconds. Drill, grind, mill, round, square or irregular pieces quickly and accurately. Save time, money and errors. PALMGREN ANGLE VISE has 2½" Jaws, 1 Plain, 1 Grooved. Accurately machined and graduated. No. 000 only **$8.75**
Swivel Base **$3.00**

ROTARY INDEX MILLING TABLE

Turn drill press into vertical miller. Mill, Grind, Index Rabbet, Mortise and Rout curved or straight PALMGREN "Hobb-E" ROTARY TABLE is a precision machine, accurately graduated. Bolts to table.

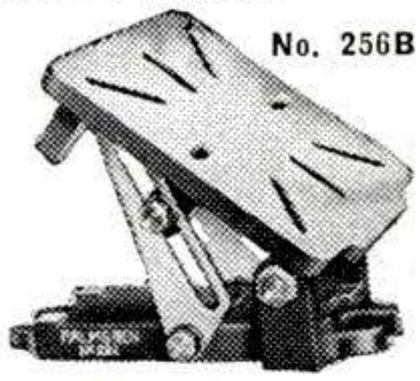


No. 83

No. 83—8" Table 4" Cross Feeds, 360° Rotary Feed **$54.50**
No. 82—Without Rotary Feed.... **$39.75**

ADJUSTABLE ANGLE PLATE

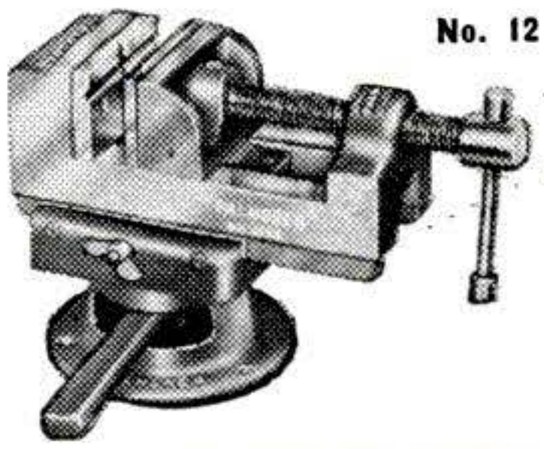
Every Hobbyist should have one for jobs difficult to hold in vise. No delay, less spoilage on complicated angles in drilling, milling, grinding or layout work. No. 256 B has 6" x 6" surface plate, 8 bolt slots. Adjustable to full 90°. Accurate graduations. Swivel Base. Only **$14.35**



No. 256B

BENCH DRILL PRESS VISE

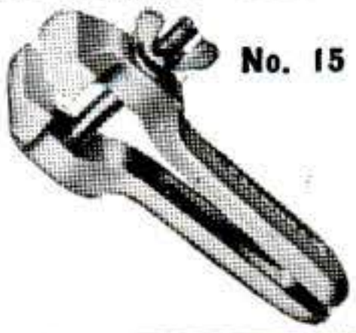
A fine "Hobb-E" tool. Base bolts to work bench for general work. Vise is dovetailed and removable for use on drill press by loosening thumb screw. Unit rotates 360° horizontally. Adapter has steel jib which locks vise in position. No. 12 Removable Jaws 2½" wide. 1 Plain 1 Grooved. Only..... **$12.95**



No. 12

ALL PURPOSE ALUMINUM HAND VISE

This "Hobb-E" tool grips small pieces for grinding, buffing and 101 other uses. Safe-guards hands and fingers. Small parts easier and faster to handle with better results. No. 15 Jaws 1½" accurately machined, can't mar work. Only..... **$2.15**



No. 15

ORDER NOW! SEND COUPON TODAY!

CHICAGO TOOL & ENGINEERING CO.,
8396 South Chicago Ave., Chicago 17, Ill.

Enclosed find_____for items checked below.
☐ PALMGREN "Hobb-E" ANGLE VISE. ☐ PALMGREN "Hobb-E" ANGLE PLATE. ☐ PALMGREN "Hobb-E" MILLING TABLE. ☐ PALMGREN "Hobb-E" HAND VISE. ☐ PALMGREN "Hobb-E" BENCH DRILL PRESS VISE. ☐ Send Circular.

NAME_____

ADDRESS_____

TOWN_____ZONE_____STATE_____

Copyrighted material

WATCH FOR BIG SYNCRO $CASH CONTEST$ NEXT MONTH

LAB TESTS PROVE SYNCRO SANDERS DO MORE WORK PER SQ. INCH SANDING PAD SURFACE THAN SANDERS COSTING TWICE AS MUCH!

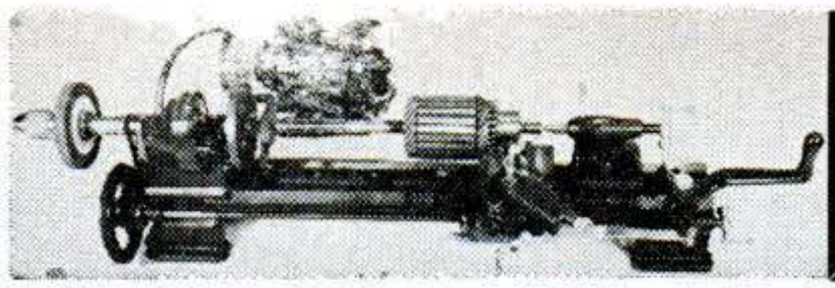
SYNCRO POWER UNITS GUARANTEED AGAINST BURN-OUT DURING YOUR OWNERSHIP OR REPLACED FREE!

Look!

SYNCRO ELECTRIC SANDERS

In material removal tests for portable electric sanders held in Syncro's Laboratory on most of the leading medium-priced sanders on the market today—it was proven conclusively that sanders made by Syncro remove more material per square inch of sanding pad surface than sanders costing twice as much. This is your proof Syncro Sanders are your best buy. No. 504, **$19.95**; No. 504-D **with** Metal Carry Case, **$22.95**. At dealers or postpaid from factory. FREE CIRCULAR. Write!

SYNCRO CORPORATION, DEPT. G-23, OXFORD, MICHIGAN USA



ONLY $65.00 FREIGHT PREPAID

WE SEND YOU A LATHE—NOT LITERATURE

To Prove by Trial the Biggest Lathe Value Ever Offered

The finest quality, largest capacity lathe ever offered at this low price. Nothing like it available at any store. Let our money-back guarantee prove it to you. We'll send you a brand new lathe freight paid. We let you see our lathe—feel it—actually machine with it while you make up your mind to keep it or shove it back in the crate and return it freight collect. And what a lathe it is! Sturdily built with bed ways machined with double V to 60°. The compound swivels 360° on a center pilot and is locked with 2 T-slot bolts. Lathe may be operated with a ¼ h.p., 1750 r.p.m. motor. Bed length 26" with cutting range 18½", 6" swing. Sent complete with hand undercutter and lever hand feed, 2 female centers, 2 male centers, driving dog, arbor attachment and grinding wheel, V-belt, 2 power feed belts, tool bit, face plate and dog. The lathe is precision and sturdily built to handle every metal or wood job within its dimension cap. Ideal for factories, hobby and home workshops or as armature lathe for garages. Full price freight paid only **$65.00.** 10 day free home trial—you must be satisfied or return it at our expense for your money back in full. Immediate delivery while they last. Send check or money order for **$65.00** to:

HAMILTON PRODUCTS, INC., 12416 Euclid Ave., Cleveland 6, Ohio

DO MORE PLANING JOBS WITH LOW-COST BELSAW $215.00

AMAZING 12¼-IN. PLANER Does All Ordinary Planing Mill Jobs. Provides attachments for Jointing, Rabbeting, Tongue, Groove, Matching. 12¼ x 6-in. capacity, 3-knife solid round all-steel cutterhead. Power feeds at 24 feet per minute, 42 cuts per inch. Provides for full line of accessory attachments—Grind and Joint knives IN THE CUTTERHEAD WITHOUT REMOVING.

FREE BOOK

BELSAW MACHINERY CO
1022 Field Bldg., 315 Westport Rd., Kansas City 11, Mo.

FULL SIZE UP TO 21" HIGH

93 "ORIGINAL IDEA" JIG SAW PATTERNS

Tired of old ideas?—Here's welcome news—a brand new series of 93 **ORIGINAL** professionally drawn and clearly printed patterns. Beautiful shelves, toys, wall plaques, novelties, lawn ornaments, etc. Instructions for construction and finishing included. **All for only $1.00.**

WALKER STUDIO PSD-2
4343 Lindell St. Louis 8, Mo.

The easy way to paint!

Speedy Sprayer

ONLY $32.50 LESS MOTOR

Favorite of home owners and craftsmen for 20 years! SPEEDY SPRAYER gives your work that professional paint finish everyone admires. Sprays paint, enamel, varnish, lacquer, etc. . . . 4 to 7 times faster than hand brushing! Lightweight, portable, uses any ¼ H.P. motor. Improved diaphragm principle assures clean, oil-free air. You'll find dozens of time and money saving uses for SPEEDY SPRAYER, including spraying insecticides 2-4-D and DDT. Complete outfit, without motor, only $32.50.

At leading hardware, lumber, and auto supply dealers.
FREE—*write for handy booklet "How to Spray."*

W. R. BROWN CORPORATION
2637 N. Normandy Ave. • Chicago 39, Ill.

Print Your Own

Cards, Stationery, Advertising, labels, circulars, photo and movie titles, church work, tags, etc. Save money. Sold direct from factory only. Raised printing like engraving, too. **Print for Others, Good Profit.** Have a home print shop. Easy rules supplied. Pays for itself in a short time. Write for free catalog of outfits and all details.

KELSEY **PRESSES, N-33, Meriden, Conn.**

Build your own *JET ENGINE!*

Order these plans today

1. JET PROPELLED BICYCLE. Assemble your own. Photo and instructions $1.00.
2. HOW TO MAKE EXPERIMENTAL JET ENGINES. Seven sheets drawings with information and instructions $2.95.
3. BOTH OF ABOVE in one order $3.75.

SEND NO MONEY. Order both at once $3.75 C.O.D. in USA plus c.o.d. postage. Send check or Money Order and we pay postage. Get other information too. Rush Order.

J. HOUSTON MAUPIN, Dept. 66, Tipp City, Ohio

Wheels Wheels

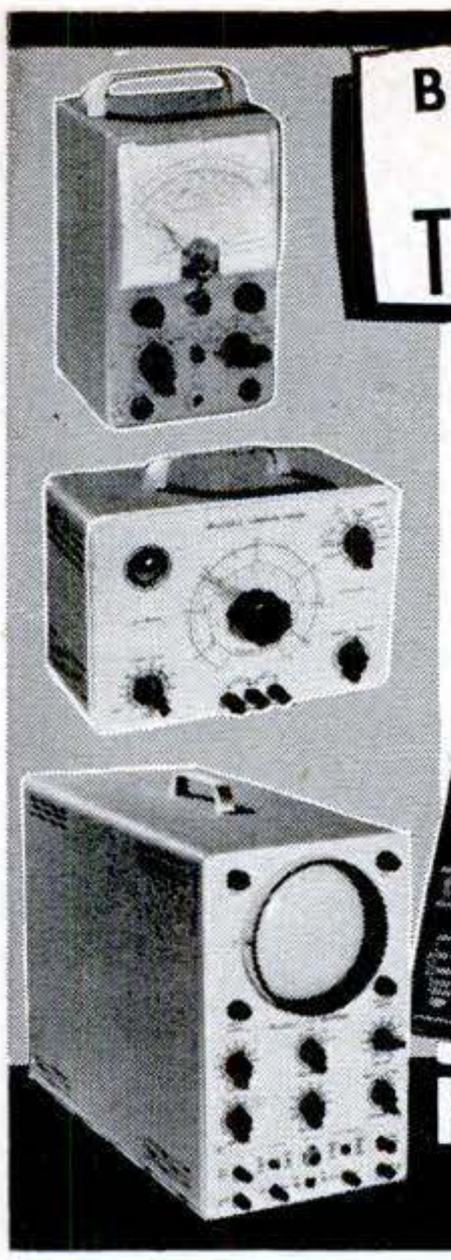
Wheels Wheels

5" Disc Wheel	5/8" Tire	5/16" or 3/8" sleeve	30c ea.
6" Disc Wheel	5/8" Tire	5/16" or 3/8" sleeve	35c ea.
7" Disc Wheel	3/4" Tire	3/8" sleeve	45c ea.
8" Disc Wheel	1 1/8" Tire	1/2" sleeve	70c ea.
7" Disc Wheel	1" Tire	1/2" ball bearing	80c ea.
8" Disc Wheel	1 1/8" Tire	1/2" ball bearing	$1.00 ea.
8" Disc Wheel	2" semi-pneum.	T. 1/2" B.B.	$1.50 ea.
10" Disc Wheel	1.75 semi-pneum.	T. 1/2" B.B.	$1.50 ea.
12" Disc Wheel	1.75 semi-pneum.	T. 1/2" B.B.	$1.85 ea.

Above wheel prices includes hub cap. Plus Postage. C.O.D.'s accepted.
AXLES—Sizes 5/16 in., 3/8 in., 1/2 in.—Cut to size—End holes drilled.

UNITED WHEEL STAMPING CO.
12131 S. PEORIA STREET PS-2 CHICAGO 43, ILLINOIS

Copyrighted material



BUILD YOUR OWN *Heathkit* TEST EQUIPMENT

Heathkits form a complete line of electronic testing and measuring equipment for hobbyists, radio and TV servicing, appliance repair, laboratory research, and engineering development of all kinds. They are completely engineered quality instruments supplied unassembled (in kit form).

Heathkits are both easy and fun to build! All punching, forming, and painting has been done for you—you get only highest quality components—and the complete, detailed instruction manual tells exactly how to assemble and use the kit. Put them together yourself and eliminate expensive construction costs—and you learn while building.

Write for free catalog today!

HEATH COMPANY
BENTON HARBOR 16, MICHIGAN

BUILD YOUR OWN POWER MOWER

With Parts We Furnish
Why break your back mowing field or lawn. Now anyone can save time, money and effort by building their own Power Mower. Build it to fit your needs, in a short time without special tools.

PULLS ITSELF, STEERS ITSELF

WRITE FOR FREE BUILDING INSTRUCTIONS—NO OBLIGATION!

T & H Mfg. Co., Dept. S-12, 811 E. 31 St., Kansas City, Mo.

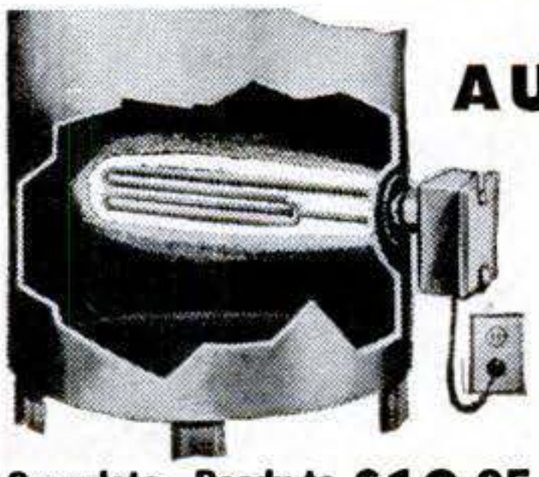
Mustang **LIGHTWEIGHT**
$370.00 (Fed. tax paid, at factory)

9.5 hp. 4-cycle. 3-speed. Foot-shift. Over 70 miles per gal. Over 60 m.p.h. Write for free circular.

MUSTANG, Dept. PS
635 W. Colorado, Glendale 4, Calif.

New Low Cost Electric Water Heater Gives You

HOT WATER AUTOMATICALLY



From Your Present Tank!

- **No dirt, grime, soot, flame!**
- **SAFE! Every part UL approved!**
- **Install in 10 Minutes, or less!**
- **No new tanks or plumbing required.**
- **Works automatically—saves on fuel bills!**

New, UL approved LECTROMATIC changes gas, coal or oil-burning water heater into modern ALL-ELECTRIC unit! Turns on automatically when needed, shuts off automatically when water is heated. To install, simply shut off water. Remove plug from water tank. Screw LECTROMATIC into opening (as shown), then PLUG IN! Plenty of hot water all day long. Uses only 1/4-1/2c electricity per gal. of hot water. Temp. adjustable from 100 to 180 degrees. Save postage. Send check or money order for $19.95 now. Money back in ten days if not delighted. Full one year guarantee! ORDER NOW!

Complete—Ready to Plug In—Only $19.95

COLLOID EQUIPMENT Co. Inc. Dept. PS-2, 50 CHURCH STREET NEW YORK 7, N. Y.

Make $20 to $30 a Week EXTRA MONEY

MACHINE SAW FILING
PAYS UP to $3 or $4 an HOUR

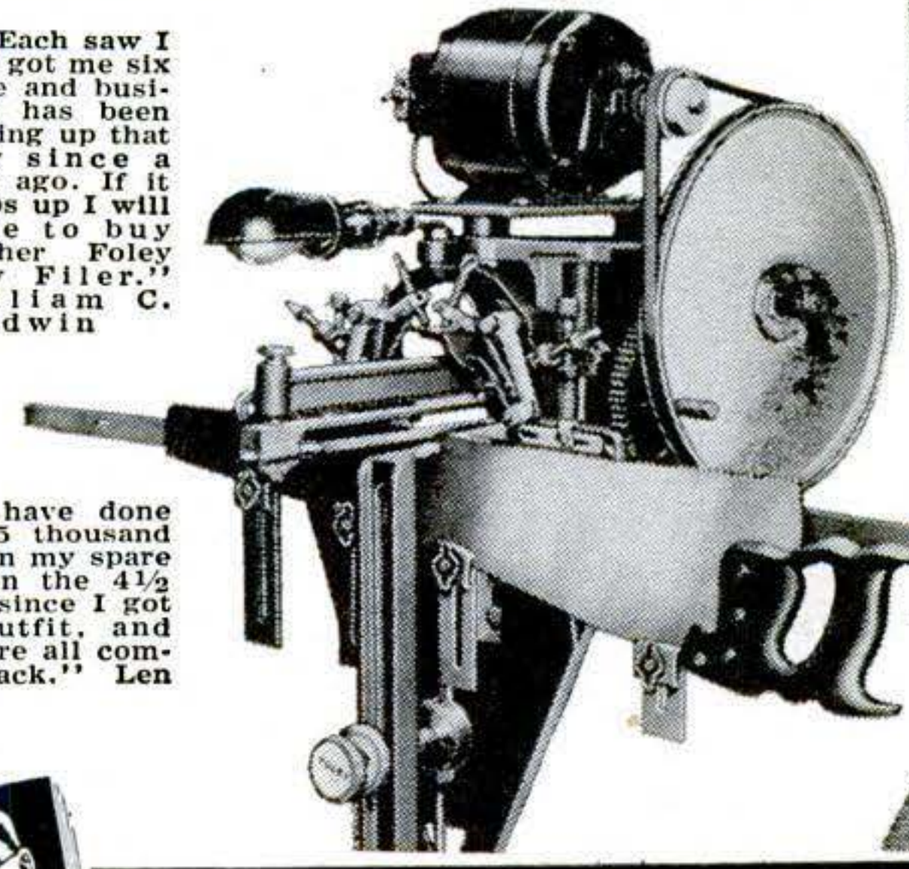
• Turn your spare time into CASH—sharpening saws with a Foley Automatic Saw Filer Pays up to $3 or $4 an hour. You will find you can make $20 to $30 a week in your spare time as a starter.

You can work in your basement or garage—no experience necessary. "The first saw I sharpened with my Foley Filer came out 100%"—writes Clarence E. Parsons. No canvassing—"I advertised in our local paper and got in 93 saws"—says M. L. Thompson. The Foley is the only machine with which you can file all hand saws, also band saws and cross-cut circular saws.

SEND FOR FREE BOOK *"MONEY MAKING FACTS"*

Shows how you can get business from home owners, farmers, carpenters, schools, factories, etc. With a small investment, no overhead, no stock of goods to carry, you can get right into a cash business,—and possibly later on develop into a full-time repair shop. Send coupon today for Free Book. No salesman will call.

"Each saw I filed got me six more and business has been picking up that way since a year ago. If it keeps up I will have to buy another Foley Saw Filer." William C. Baldwin



"I have done 4 or 5 thousand saws in my spare time in the 4½ years since I got the outfit, and they are all coming back." Len Crego

Send Coupon for FREE BOOK

FOLEY MFG. CO., 219-3, Foley Bldg.
Minneapolis 18, Minnesota
Send FREE BOOK—"Money Making Facts."

Name.....

Address.....

Copyrighted material

WOODS

get this *BIG Catalog* without cost!

Loaded with how-to-do it articles on wood-finishing, veneering, making inlay pictures and cabinets. Contains 83 distinct inlay designs and borders, plus a wood identification panel of 60 different varieties. All shown in full natural color suitable for framing.

A MULTITUDE OF MATERIALS

Lowest Prices On

Veneers	Period Furniture Hardware
Inlays	Modern Picture Frame Molding
Lumber	Upholstery
Plywood	Hand and Electric Tools
Plans	Finishing Materials
Supplies	Decorative Metals
Plastics	Leather

Albert Constantine & Son, Inc.
Dept. PS-9, 797 E. 135th St., N.Y. 54
ESTABLISHED SINCE 1812

● VISIT US at our N.Y. Plant. Demonstrations every Saturday on making inlaid pictures, wood finishing and other crafts. Everyone invited.

SEND THIS COUPON!

Albert Constantine & Son, Inc., Dept. PS-9
797 E. 135th St., New York 54, N.Y.

Enclosed find 50c (refunded on 1st order) for your copy of "Manual For Craftsmen" No. 52.

Name_____
Address_____
City_____ State_____

ECONOMICAL! POWERFUL!

ELECTRIC MOTOR

GEAR BOX & POWER-PACK

EDUCATIONAL! FUN! SAFE!

ALL 3 FOR $2.98

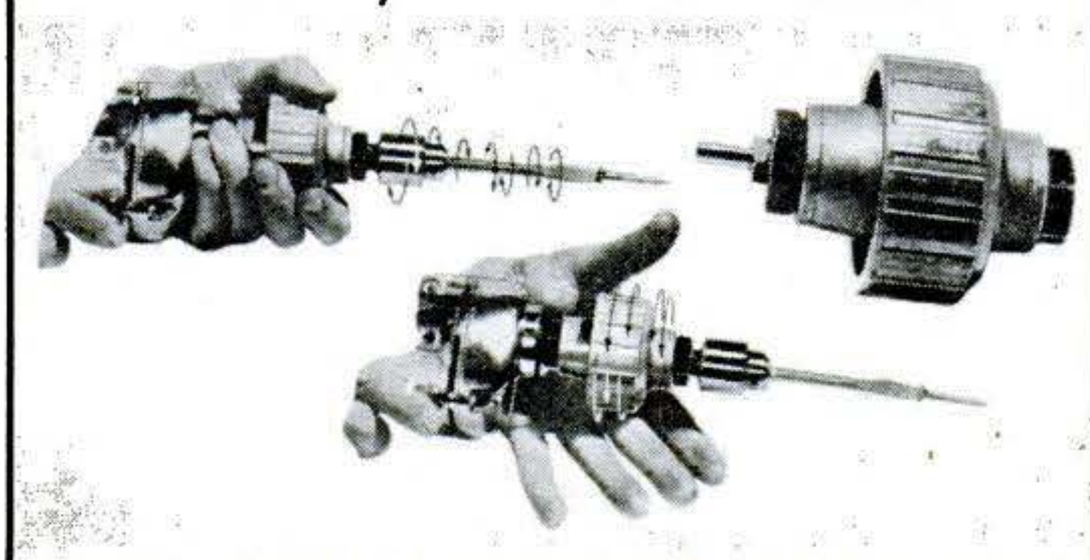
Add many hours of pleasure to your hobbies. Let this POWERFUL Motor Kit drive model trains, boats, planes, carousels, cars, construction sets, etc. Get this amazing Power Kit. The motor is powerful yet measures only 1x1x1¼ inches. Turns up to 6,800 r.p.m.'s and it's instantly reversible with the new POWER-PACK which holds two standard flashlite batteries. The Power-Pack gives you remote control operation too! PLUS the outstanding Gear Box which gives you ratios up to 81 to 1.

This is the swellest little POWER UNIT ever made to run your model trains, turntables, fans, boats, draw bridges or whatever else you want to make GO. Imagine how many different ways you can hitch them up to run things . . . with gears . . . direct-drive and belt-drive arrangements. There's no end to their uses.

ORDER NOW! Be the first amongst your friends to own this POWERFUL MOTOR, GEAR BOX and POWER-PACK for only $2.98. (If batteries are desired, add 25c for two.) All will be sent to you by return mail. When postman delivers it, pay only $2.98 plus postal charges. If not completely satisfied, return it within ten days and your money will be refunded in full. ACT NOW! Send check or money order and save on postage!

ELECTRO-KRAFT CO. DEPT. S-2, P.O. BOX 237
Old Chelsea Station New York 11, N. Y.

BABCO 5-TO-1 SPEED REDUCER FOR 1/4" ELEC. DRILLS



Convert your drill to electric screwdriver—drill holes to 1¼" in wood, to ½" in masonry. Planetary gear system gives tremendous torque increase. Adapters furnished for ¼" or ½" chucks. Instant starting or stopping with hand clutch control. To start, simply grip reducer, release to stop. At hardware stores and tool dealers, or $9.95 ppd. from Babcock Mfg. Co., 6259 Claremont Ave., Oakland 18, California.

---

250 POWER . . . . .

Complete Telescope Lens Kit *only* **$3.49** postpaid

Conquer Space, Explore the Universe, Planets, Moon Craters, New Stars, etc. Complete Lens Kit consists of 80 inch focal length ground and polished objective lens, eyepiece lenses for 50 POWER, 100 POWER, 150 POWER, 200 POWER, 250 POWER, and all necessary lens fittings. Easy to make from simple step by step instructions. (Tripod and mount not included.) Money back guarantee.

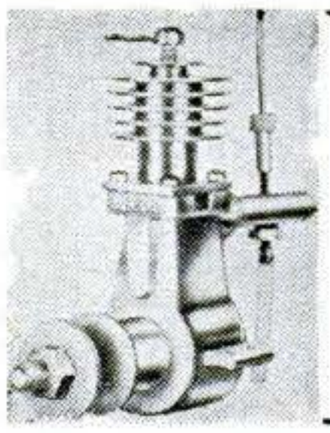
BUSSE SALES CO., Hartford, Conn., Dept. PS-8

GOLD - SILVER - COINS

Easily located with new Lightweight M-Scope Detector. Superior performance, lowest price, monthly payment plan.

FREE LITERATURE

FISHER RESEARCH LAB., INC.
PALO ALTO CALIF.



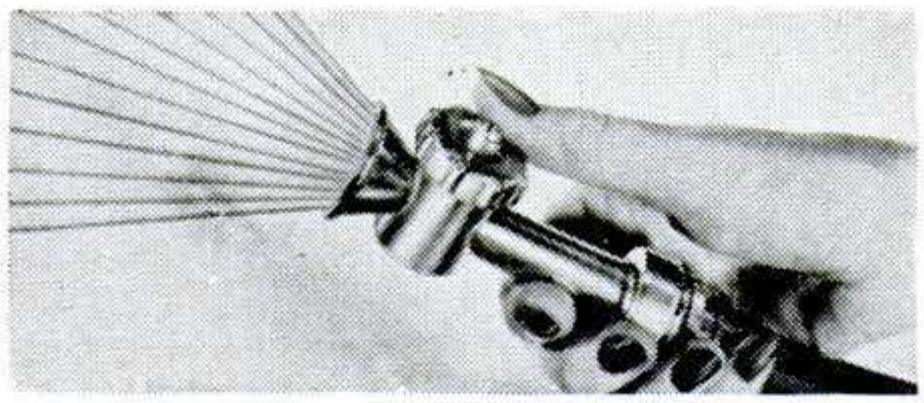
Our 590th Advertisement

REAL DIESEL ENGINE

$3.95
- **for planes, boats, midget cars**
- **7500 RPM; 1/7 HP; ht. 3½"; wt. 5 oz.**
- **precision machined for smooth operation**

You just can't beat this price for a precision diesel engine! Streamlined, compact, easy to install. Thousands of satisfied users all over the world. Fast delivery if you ORDER TODAY! Send $3.95 plus 25c postage.

Gotham Hobby Corp. Dept. S, 107 E. 126th St. New York 35, N.Y.



From a Powerful Jet to Softest Rain

A perfectly wonderful hose nozzle to add to any gardener's pleasure. Elkav Valve Hose Nozzle is light, strong and rust-resistant. From seedling dewdrops to jet power. Will reach roof of a two-story house. Positive shut-off. Postpaid $1.50. No COD's please. Guaranteed to please. (Send 25c for Gardening Hints booklet.) Albin of California, Rm. 62, 1401-99 W. 8th Street, Los Angeles 17, Calif.

Copyrighted material

FINE TOOLS *NEED* FINE OIL!

• Lubricates
• Prevents Rust
• Cleans • Polishes

SOLD EVERYWHERE

3-IN-ONE *Oil*

SpeedWay SpeedSander

SANDS, SMOOTHS, CLEANS, BUFFS, POLISHES

This motor-driven, all-ball-bearing, orbital motion finishing sander works any wet or dry abrasive—3 covers from standard sandpaper sheet makes it easy to finish or refinish furniture, woodwork, walls. Ask your dealer to demonstrate.

$34.50

Write for electric tool catalog.

SpeedWay Mfg. Co. 1864 SO. 52ND AVE. CICERO 50, ILLINOIS

64" FLEXIBLE SHAFT
WOVEN WIRE CORE

USE AS ELECTRIC DRILL

only $5.95

REAL BARGAIN — cannot be duplicated for $15.00. Coupling fits ½" motor shaft; other end fits standard chuck. Durable, heavy. Use it for grinding, polishing, buffing, drilling, etc. Chuck for same only $1.25. Send check or money order and we will ship P.P. prepaid. Money refunded if not satisfied.

HARRY W. RETTEW 400 West Avenue Jenkintown 6, Pa.

CHOOSE FROM PROFESSIONAL QUALITY

WESTCRAFT TOOLS

AT **WESTERN AUTO**

UP TO 2000 POWER!
MICROSCOPES...OPTICS

FROM $14.95 OPTICS FROM $1.00

UNHEARD OF VALUES IN PROFESSIONAL QUALITY OPTICAL INSTRUMENTS . . .

These fine instruments are used throughout the U.S. in laboratories, schools, colleges and physicians' offices

SEND FOR FREE 32 PAGE CATALOG

World's greatest values in hobbyists, students, and professional research microscopes, complete accessories, mechanical stages, eyepieces, prepared slides, dissecting microscopes, ore, mineral, gem microscopes, binoculars, telescopes, magnifying glasses of all types. Each item a bargain . . . money-back guarantee.

THE AKRON 4400 SUNSET BLVD. LOS ANGELES 27, CALIF. 2-PS

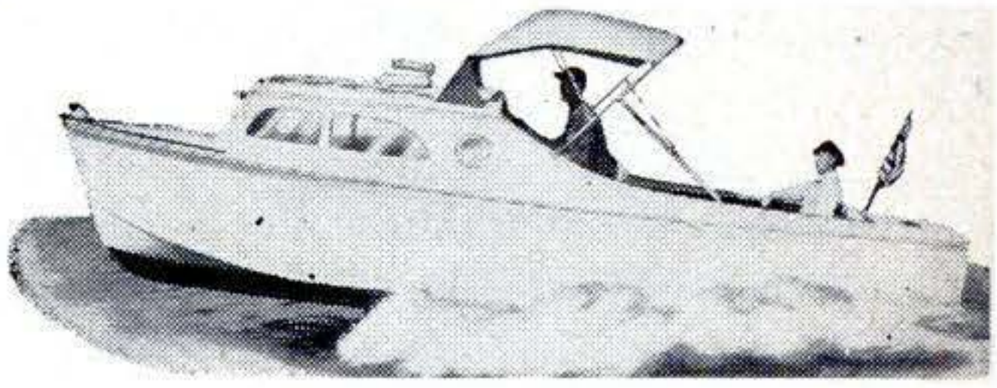
NEW
1953 BOAT KITS BY
U-MAK-IT

30 Models **8 TO 23 FEET**

New

21 FT. OUTBOARD AND INBOARD CABIN CRUISERS

Roomy cabin sleeps 2. Includes full size toilet room, galley, sink & ice chest.



New

18 FT. OUTBOARD AND INBOARD CABIN CRUISERS

Fast Vee bottom hull, speeds up to 25 M.P.H. Accommodations for 2.

ROWBOATS OUTBOARDS INBOARDS

8 to 14 Ft. 12 to 21 Ft. 16 to 23 Ft.

NEW 1953 CATALOG

48 PAGES, shows construction details. Incl. everything to build your own—hardware, engines, conversions, paint & color chart.

SEND 35¢ COIN TODAY

U-MAK-IT PRODUCTS 703R - WHITTIER ST. Bronx 59, N. Y. City

KIT BOAT OWNERS

Protect your boat with Fiberglas. Makes new & used boats permanently watertight. — Lengthens lifetime, strengthens construction, increases value & safety.

SEND 10¢ postage for illustrated booklet

EVER GLASTING 703R-WHITTIER ST. BRONX 59, N. Y. CITY

Copyrighted material

Sturdy, Substantial
ALL METAL
PRECISION GROUND and POLISHED TABLE

Save $20 to $40!

Does the work of Power Saws costing as high as $60! Shop and compare!

8-inch ALL METAL TILT-ARBOR POWER SAW

An Amazing Bargain!
$19.95
West of the Mississippi $21.95
8-inch Combination Rip and Cross Cut Blade $2.95

BLADE TILTS TO 45° ANGLE! TABLE STAYS LEVEL!

★ Patented motor mount designed for permanent belt tightness!
★ Cuts 2"x6"s in 2½ seconds!
★ Operates on 1/4 or 1/3 h.p. motor. Even a washing machine motor will run it!
★ Blade easily raises or lowers!
★ Ball bearing floating drive!

CUTS 2" x 6s" in 2½ SECONDS!

You can mitre, bevel, or saw any length wood at any angle yet the table and work are always level. A simple adjustment of the patented, improved mechanism tilts the blade up to 45°. Patented built-in motor mounts eliminate complicated gears, always keeps belt at correct tension. Has height lock for dadoing. Blade raises and lowers. Does everything a $60 saw will do! Cuts joists, siding, rafters, frames, joints, slots, etc. Accurately rips, wide or narrow panels! With attachments cuts dadoes and moldings! Mounts on any kind of tool bench!

YOLANDS PRECISION TOOL CO., DEPT. F3
20 Boylston Street, Boston 16, Mass.

Please rush your new ALL METAL 8-INCH TILT-ARBOR POWER SAW. I enclose ☐ Check ☐ Money Order for $19.95 ($21.95 west of the Mississippi) plus $1.00 for postage. If not delighted I may return the saw within 10 days for full purchase price refund. Sorry, no C.O.D.'s.

Name .....

Address .....

City ..... Zone ..... State .....

☐ If 8" combination Rip and Cross Blade is desired, enclose $2.95 extra and check square at left.

YOLANDS PRECISION TOOL CO.
20 Boylston Street, Boston 16, Mass.

The SPEEDY STITCHER

Sews quick and strong, making new or repairing all sorts of leather and canvas articles—boots, shoes, coats, gloves, belts, saddles, golf bags, Ski, Football, Baseball, Skating, Hunting, Fishing, Camping togs, grain bags, burlap, etc.

Each stitcher comes ready to use with a reel of waxed thread and 3 needles, assorted sizes. Needles are carried in handle. A handy tool for home or on hunting, fishing or camping trips.

Price Postage prepaid $1.00

LYMAN BRADFORD CO.
Box No. 350 KINGSTON, MASS.

LOOK FOR THIS SELF-SERVICE DISPLAY

Fuller's famous unbreakable amber handles top the finest steel screw drivers and wood chisels. Fully guaranteed. At hardware stores everywhere.

Now! With NEW "Blisterproof" DOME

Wholesale Distributors! Write for Catalog Pages & Prices.

FULLER TOOL COMPANY, INC., 3522 Webster Ave., Bronx 67, N. Y.
World's largest makers of Amber-Handle Tools
EXPORT SALES DEPT., JOHN H. GRAHAM CO., 105 Duane Street • New York, U. S. A.

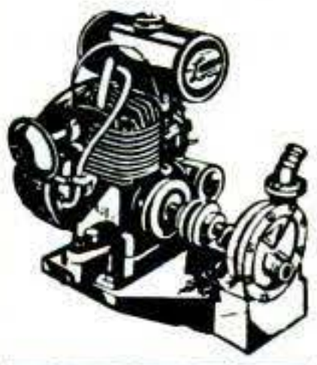
DRAINS Cellars, Wash Trays; CIRCULATES Oil; IRRIGATES Gardens!

ORIGINAL "Type P" Pump has 1,001 year 'round uses—home, shop, garden, farm. **DRAINS** cellars, cisterns, wash tubs, ditches, pools. **IRRIGATES** gardens, lawns, truck patches. **SPRAYS** crops, orchards. **CIRCULATES** oil, coolant. **SUPPLIES** water to elevated tanks from wells as deep as 25 feet. 2400 gals. per hr. capacity. 360 GPH 75' high. 1500 GPH from 25' well. 1" suction and ¾" discharge ports fitted for hose. Use ⅛ to ½ HP motor or engine. ½" Stainless Shaft; Oilless Bearing. **DOES NOT CLOG OR RUST!**

ONLY $6.95
Motor coupling included.

WHICH OF THESE 5 PUMPING UNITS DO YOU NEED?

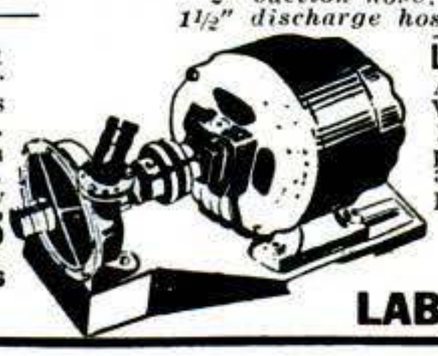
Easy to Assemble! Easy to Use!



LITTLE GUSHER Irrigates, drains, waters livestock, fights fires! Pumps 2000 GPH 25' high or 360 GPH 75' high. 2 HP engine with 3" power take-off V-pulley. Adjustable from 1700 to 4500 RPM. Portable. Dollar for dollar, pound for pound, the best pump value at **$69.00**
Complete with 1½" Bronze Foot Valve.
1½" suction hose. **$1.25** *per foot.*
1¼" discharge hose. **$1.00** *per foot.*

BIG GUSHER Pumps 7000 GPH. Complete with 3' of 2" suction hose and 2" foot valve, only **$89.00**
2" suction hose. **$1.75** *per foot.*
1½" discharge hose. **$1.25** *per foot.*

TYPE C-4 Direct drive. Ideal for plumbing fixtures below sewer line. Complete with ¼ HP motor, **$25.95.** Without motor only **$11.25**



Also Gear Pumps in All Sizes.

LOW-COST ACCESSORIES
All Bronze Foot Valve for 1" hose **$3.45**
1" Suction Hose, per foot ..... **.38**
¾" Discharge Hose, per foot .. **.22**

TYPE D-3. Cleans 40' well or cesspool quickly! Drains, Irrigates, etc. Operates in any position. 400 GPH 40' high; 1400 GPH 20' high. With ⅓ HP ball-bearing 3450 RPM motor **$32.95** Without motor, **$12.85**

TYPE D-4 Drains cellars, pools, boats. 1500 GPH 5' high; 600 GPH 13' high. Same as **D-3,** except with ¼ HP 1750 RPM motor. . **$27.45** Without motor. **$12.85**

AUTOMATIC SWITCH for 24" sump, fits D-3 and D-4, **$4.60.**

MONEY BACK GUARANTEE. All prices POSTPAID if money order or check with order. West of Mississippi & Canada, add 50c for Type P; $1.00 for other models.

LABAWCO PUMPS, Belle Mead 4, New Jersey

Copyrighted material

DRIVING COMFORT at its best!

The New ***Electric Throttle***

WITH FOOT CONTROL

INSTALL IT YOURSELF
Send for FREE Illustrated Folder

The Electric Throttle ("Speed-selector") sets whatever speed you choose electrically — releases instantly at a touch on the toe-button, or by applying foot brake. Banish foot and back strain for good! Price, $17.50 F. O. B. Check or C.O.D. Ten day money-back guarantee. Several State franchises open. Dealer inquiries invited. Give car, make, and year. Pays for itself in gasoline savings.

An Ideal Gift Item

D & M MFG. CORP. • Anderson, Indiana

SMALL MOTOR & ELECTRIC DRILL ARBORS

MOTOR SHAFT ARBORS—Available for 1/4", 5/8" and 3/8" shafts. Specify sizes desired.
ELECTRIC DRILL ARBOR—Fits 1/4" electric drills.
All arbors come with bushings to fit grinding wheels and accessories with 1/4", 3/8" or 1/2" hole.
Any 2 Arbors $1.25 ppd.
No C.O.D.'s.

A.D. McBURNEY, 317 E. 4th St., Los Angeles 13, Calif., Dept. S-26

Freeland METAL BOATS

NEW LUMA TOP for '53
Aluminum—12 ft.; 46" beam.
Carry atop car. **$179.**

GALVANNEALED 12'-14'; $78-$130
Rugged, all-welded construction.
Fast, safe. Take motors to 10 H.P.
Write Dept. 92 for folder.

FREELAND SONS CO., STURGIS, MICH. FLA. BRANCH 302 S. WATER ST., TAMPA

AMAZING OFFER!

New Book Shows How To Fix and Build TV, Radios!

Unless this book saves you at least ten times its modest cost, return it for refund! EVERYBODY'S TV AND RADIO HANDBOOK—256 pages. 150 projects—only $2.49. Order from Popular Science, Dept. 253, 353 Fourth Ave., New York 10

PAGE *Garden Tractors*

1953 MODELS More Work! Less Cost!

- 2 to 6 HP walking and riding machines • Over 60 attachments available! • Enclosed gear drive with reverse.

No belts — No chains!
Also new one-wheel "Bantam" model
Low Prices — Easy Terms
25 years' experience behind every PAGE—fully guaranteed!

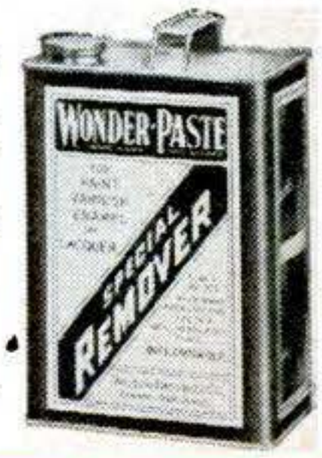
Plows, discs, tills, seeds, cuts grass and weeds, and many other jobs!

Free Catalog Shows over 60 attachments!

PAGE 1816 S. 81st St. Milwaukee, Wis.

WONDER-PASTE

For a quick, easy job, try Wonder-Paste. Applied with a paint brush, it reduces the toughest finish to a soft, pulp-like mass that EASILY PEELS OFF with a putty knife! At paint and hardware dealers.



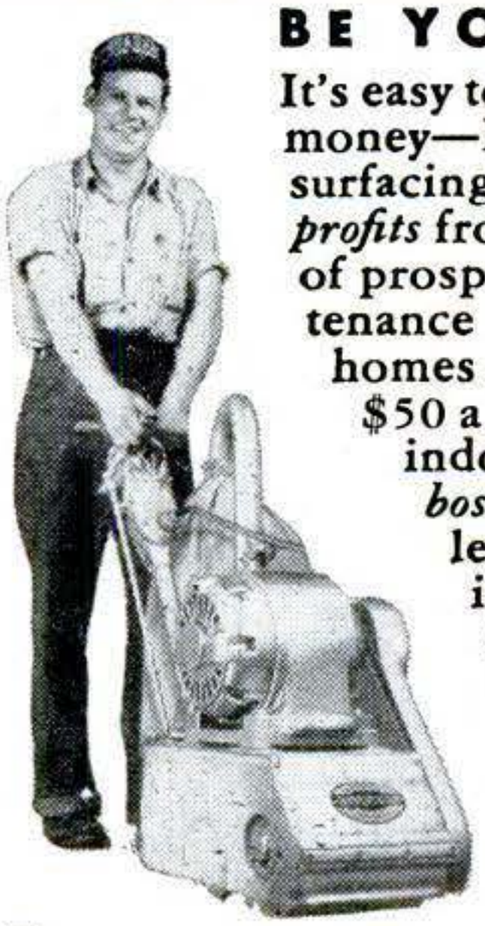
Write for leaflet and advice on your particular removing problem.

Wilson-Imperial Co., 121 Chestnut St., Newark 5, N. J.

Over 3 million cans sold—it must be good!

MAKE *Big Money* SANDING FLOORS!

BE YOUR OWN BOSS



It's easy to turn your own labor into money—BIG MONEY—in floor surfacing work. You keep *all the profits* from your labor! Thousands of prospects—sand floors in maintenance or remodeling of old homes . . . also new homes! Earn $50 a day and more . . . pleasant indoor work . . . and *you are boss!* Send for "tell-all" booklet entitled "Opportunities in Floor Surfacing" enclosing 25 cents in coin or stamps to cover handling. The American Floor Surfacing Machine Co., 532 So. St. Clair St., Toledo 3, Ohio.

AMERICAN

FLOOR MACHINES • PORTABLE TOOLS

Copyrighted material

THE AMAZING NEW POLARVISION SAFETY LIGHT

STOP HEADLIGHT GLARE!

STOP FOGGING & ICING! (ON WINDSHIELD)

FITS ALL CARS & TRUCKS

Lets you DRIVE IN SAFETY & COMFORT

NEW revolutionary discovery—Now available! Famous "Ergon Lens" and other elements produce a BLACK RAY—(almost invisible to the eye) that shines down on your windshield. This ray COUNTERACTS THE GLARE from oncoming headlight street lights, etc. PREVENTS FOGGING AND ICING on your windshield during cold weather! WORKS LIKE MAGIC!

BEAUTIFUL RICH-LOOKING ACCESSORY

All vital elements encased in precision "air-tight," heavy duty, chrome case — sealed and guaranteed a lifetime. All installation equipment and copper cable included. Easy to install—no holes to drill.

FULL MONEY BACK GUARANTEE

This new product resulting from years of research and testing secret light formulas—is ALREADY America's most wanted automobile accessory! Send only $1.00 for C.O.D. delivery.

ORDER BY MAIL for immediate delivery.

COMPLETE PRICE $6.95 POST PAID

Dual kit (inc. passenger side mounting) $11.90

Electronic Developments, Dept. A-2
10409 West Washington Blvd.,
Culver City, Calif.

Enclosed find $_____

Please Rush Polarvision Light:

☐ Post Paid ☐ C.O.D.

Name_____

Address_____

City_____ State_____

CAR HARD TO START?

Get EASY STARTING ... Smoother Engine Performance ... Save Gas! with SENSATIONAL NEW

SISSON Electrimatic CHOKE

Positive, dependable *electric choking* gives *quick, easy starts* every time in any weather. Smoother warm-up . . . no stalling ...no flooding...no seasonal adjustment! Fits any car equipped for automatic choking. $5 complete.

INSTALL IT YOURSELF Get FREE Illustrated Folder

Sisson Choke, 1654 Ohio Avenue
Anderson, Indiana

☐ Please send me FREE illustrated Electrimatic folder

☐ I enclose $5 (check or money order) for one Choke

☐ Ship C. O. D.—I will pay postage

Car Make_____ Year_____ Cyl._____

Carburetor Make_____

*Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

BUILD A POCKET RADIO

In answer to hundreds of requests from radio experimenters and builders, Electronics Miniatures Labs, largest manufacturers of miniature radio kits, present . . . plans for three brand-new, low-cost, easy to assemble, shirt-pocket size radios . . . genuine portables, sets that you can enjoy while walking about anywhere . . . feature hearing-aid earsets.

- **TV Audio-Tot, Two Tube Portable Set** (to enjoy your favorite T-V program)
- **VHF-FM Pockette, Two Tube Portable Set** (receives F-M, police, taxis, aircraft)
- **Pocket-Pal, Two Tube Standard Broadcast** (truly an electronic miracle, see photo)

These are real precision radios that are unique in their field and are not to be confused with the "gadget pocket sets" usually offered. All three sets use sensitive variable condensers, volume controls, hearing-aid earsets, miniature low drain tubes, built-in antenna systems and rugged aluminum cases that house batteries and all parts. **Complete plans include schematic and beginners picture diagrams, many photos and full assembly instructions. Choice of any plan, only $1.00 or all three sets, only $2.00 postpaid.** Parts used are standard and easily obtainable. For added convenience, FREE WITH ORDER FOR PLANS, a catalog listing aluminum cases and all parts, including many prefabricated assemblies, is forwarded.

RUSH YOUR ORDER TODAY—NOW!

ELECTRONIC MINIATURES, Beaverdam, Virginia

SAFE-GLOW REFLECTOR

PREVENTS ACCIDENTS!

Amazing New Discovery that glows bright in the dark as light draws near.

- **Ideal as markers on Cars, Trucks, Buses, Trailers, Bicycles, etc.**
- **Protects Parked Cars, Trucks and Trailers at Night.**

Reflects 200 times more light than white painted surface. On this reflector are thousands of microscopic beads that react and throw red light back. Withstands all weather conditions. Stays clean, brilliant and bright. Size 24" x 1". Pressure sensitive, adheres to any surface.

Send $1.00 Now! Mailed prepaid. **$1.00**

Money back guarantee! Sorry, No C.O.Ds.

SAFE-GLOW, 1915-B Archer Ave., Chicago 16, Ill.

ELECTRIC SHEAR SHARPENER

Over 85,000 Sold—It Must Be Good

Genuine Carborundum wheel ideal for shop or home use. Send remittance with order and shipment will be made at once, prepaid to your door, complete with electrical goods catalogue.

Motor driven **$9.75** complete with vise

WILLIAM MARVY COMPANY, Dept. 90
479 St. Peter Street St. Paul 2, Minn.

$ FREE COURSE! BIG PROFITS! $

Flocks & Sandblasts

Dual Purpose Spray Gun! Uses only 25 lbs. Air Pressure!

- Thousands of uses in Home, Shop, Industry: Makes Auto Interiors Clean & New, Lines drawers, Marproofs lamp bases, Refinishes any object. All in colorful Flock, Etch & Frost windows, glassware, etc. Removes Paint and Rust from Autos, Tools. Guaranteed! Send **$24.75** or write for free information. **Complete Flocking Supplies!**

Only $24.75 complete

BLASTO SPRAY GUN MFG.
Dept. PS-2, 7007 Haas Ave., Los Angeles 47, Calif.

WATERLOO METAL BOXES AND CHESTS

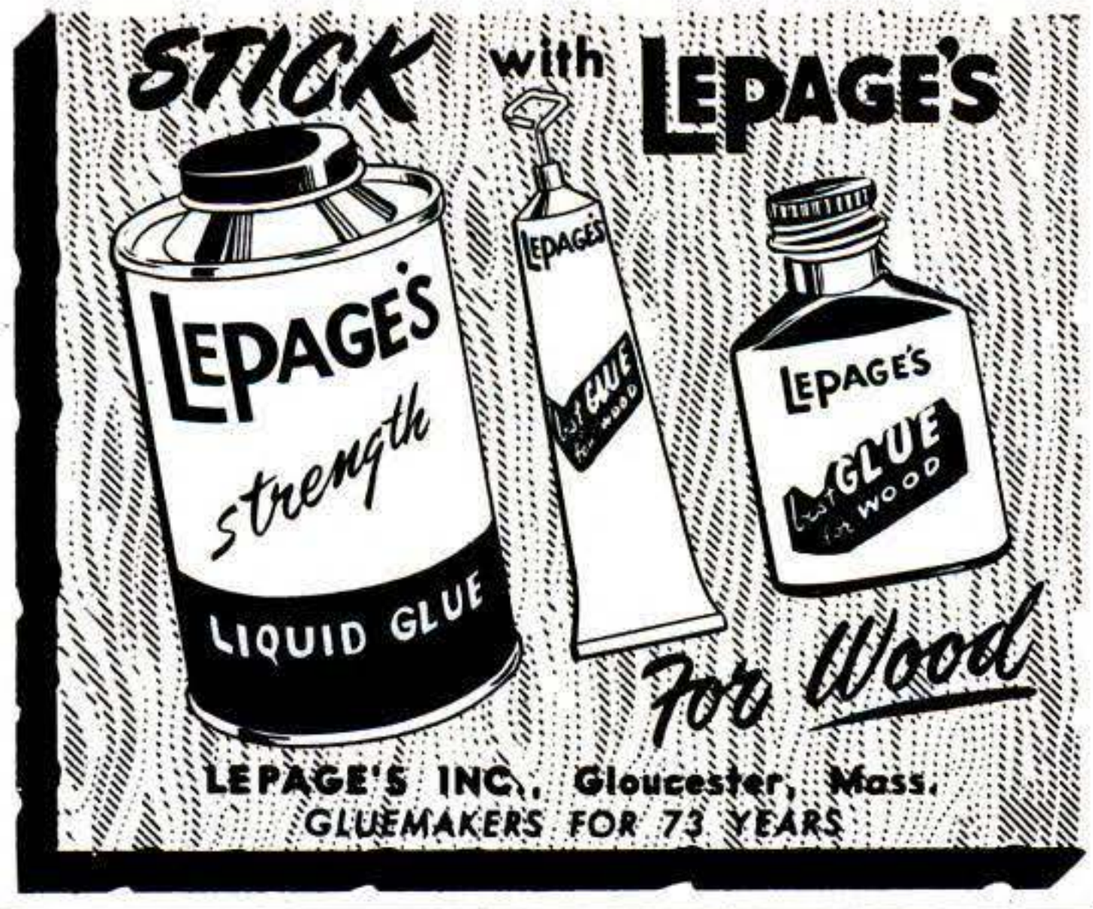
BUY THE FINEST Metal Boxes

..FOR EVERY SHOP USE

- Designed to meet exacting requirements of tool experts in every phase of automotive, radio, electrical, and industrial work Unmatched for lightness, strength, beauty durability See them at your hardware dealer now or write for free catalog.

WATERLOO VALVE SPRING COMPRESSOR CO., WATERLOO, IOWA

Copyrighted material



MAGNETS 225 lb. PULL

GENUINE ALNICO—NEVER WEAKENS

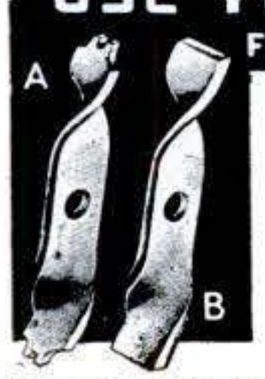
AMAZING, PERMANENT MAGNETS—WILL NOT WEAKEN! NON-ELECTRIC
Retrieve guns, tackle, tools and other steel items from lake, river, plating tanks, drains or other hard-to-reach spots. Recover drills, taps, etc. from sweepings. Clear alley of harmful tacks, nails. Many other uses. Pays for itself quickly. GUARANTEED. Try any magnet one week. Money refunded if you are not well pleased.

No. S-725 (Weighs 54 oz.) Has pull of 225 lbs. on steel block **$15.00**
No. S-675 (Weighs 49 oz.) Has pull of 175 lbs. on steel block **$10.50**
No. S-650 (Weighs 41 oz.) Has pull of 150 lbs. on steel block **$ 8.50**
No. S- 30 Hobbyist assortment of six small magnets..... **$ 1.50**
Send Money Order or check. We pay postage. No C.O.D.'s.

MIAMI MAGNET COMPANY, 3240 N.W. 27th Ave., Miami 42, Fla.

USE YOUR BENCH SAW

FOR JOINTING & CUTTING MOULDINGS



With our six inch tool steel cutters make mouldings, casings, drop-leaf tables, grooves beading and jointing. Moulding cutters, A 1 in. wide $1.75, 1½ in. $2.25. Jointing cutters, B 1 in. $1.75. 1½ in. $2.25. E 1 in. for drop-leaf tables. $1.75. E 1½ in. Makes ¾ in. cove & Quarter. $2.25. Postpaid. Guaranteed. State size hole. List & Folder free.

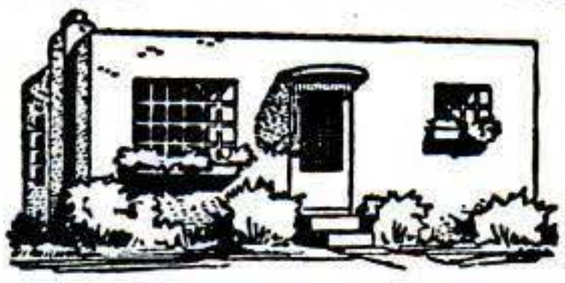
JOHN A. SANDSTROM
Rt. 2-P. Clearwater, Fla.

NO PARTS TO FLY OFF!!

$750 BUILDS 4 ROOMS & BATH!

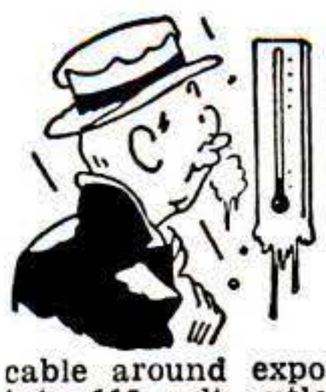
WHY PAY RENT?

For Seven Hundred Fifty Dollars and 30 days of your spare time, you can build yourself this Beautiful Home.



Living room, 11x15, Front bedroom 9x11, Back bedroom 10x12, Kitchen 9x11, Bath 5x8, Hall 3x4. Wind out steel casement windows, Concrete block, stuccoed. Illustrated pictures, step by step instructions, blueprint and material list, $1.00. Money back guarantee.

L. H. FARROW, Dept. D
Box 645 Columbus 16, Ohio



NO FROZEN PIPES

When You Use WRAP ON ELECTRIC HEATING CABLE

Protects to 35° *Below* Zero

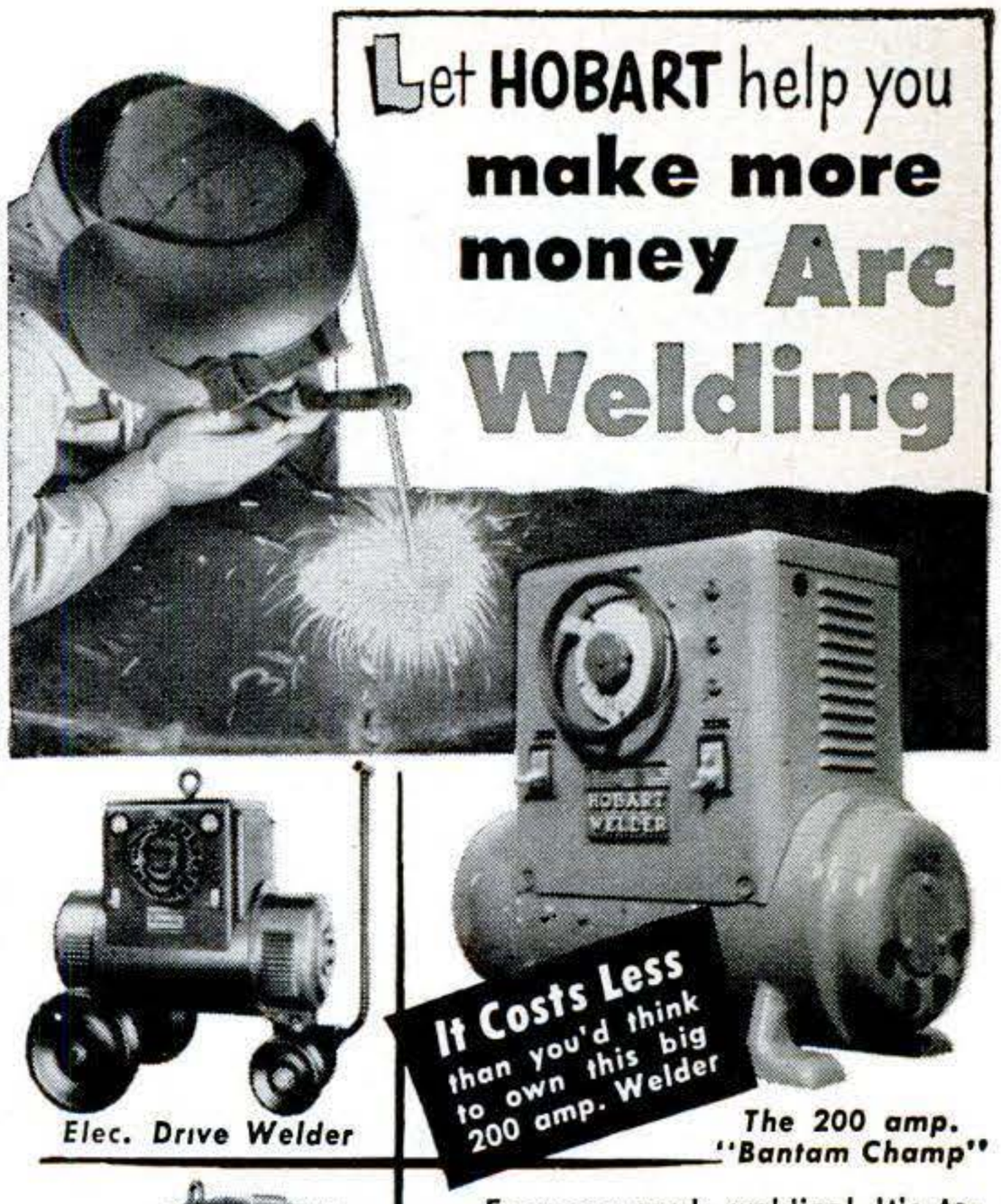
No more worry, expense or inconvenience from frozen pipes! Just wrap plastic coated cable around exposed or shallow underground pipes and plug into 115 volt outlet. Maintains low heat—like electric blanket. Uses only small current. Thermostat turns on only when needed. No radio or TV interference. Low prices—complete with connections. Satisfaction or money back.

G-Q ELECTRIC SEED BED HEATER. Seeds are up in 30 hours—root cuttings in 6 days. You cut germination time 2/3—transplant 2 weeks sooner. Uses house current. Thermostat control. Easy installation. Write for catalog and FREE folder on seed bed construction.

GRO-QUICK SALES

10342 Lanark Ave.—Dept. 43-3, Detroit 24, Mich.
Tuxedo 5-5828

Free Catalog



Elec. Drive Welder

The 200 amp. "Bantam Champ"

Gas Drive Welder

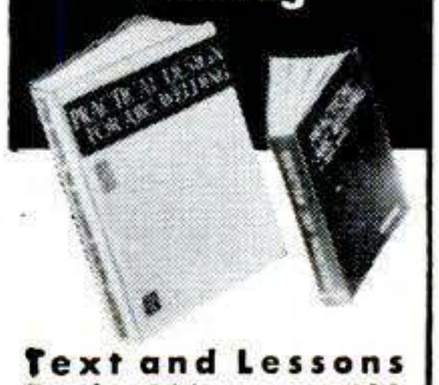
Everyone needs welding! It's today's fastest growing, biggest paying trade—one that's easy to learn—one that offers unlimited opportunities.

Take a look around you! See the number of farmers, contractors, factories, builders, etc. in your town that need dependable welding work—and are willing to pay top prices for it. **Then cash in** on this big pay by setting up your own welding shop or department.

All you need is one Hobart Welder for a Hobart goes anywhere—handles any job—assures you better, faster, lower cost welds. That's why they're used in America's leading production plants. And they make welding easy to learn. With their 1000 combinations of heat—and remote control—they're truly "simplified." Available in a choice of electric or gas drive models, portable or stationary. Check coupon for details.

HOBART Trade School can make you more valuable. Learn welding quickly, easily in this modern, non-profit school. Complete or partial courses. Best eqipment, thorough training, experienced instructors. Check coupon for booklet.

Get these valuable "How-To" books on modern arc welding



Text and Lessons Book. 544 pages, 600 ill. .....**$3.**
Lessons Book. 200 pages, full ill.....**$1.**
Practical Design. 100's of weld ideas in design form. 1 vol.....**$3.50**
Set of 3 vols.....**$10.**

HOBART BROTHERS CO., Box P-23
Troy, Ohio
"One of the world's largest builders of arc welders"
clip and mail today...a post card will do

HOBART BROTHERS CO., BOX P-23, TROY, O.
Send complete details on items checked.
☐ Electric Drive Welders ☐ Gas Drive Welders
☐ Hobart Trade School. Send books checked:
☐ Text and Lessons ☐ Lessons. Practical Design: ☐ Vol. 1 ☐ Vol. 2 ☐ Vol. 3 ☐ set of 3 vols. ☐ Cash enclosed ☐ C.O.D.

free ☐ *Welder's Vest Pocket Guide*

NAME_____
ADDRESS_____
CITY_____ STATE_____

Copyrighted material

A CORBIN PADLOCK

COSTS LESS THAN YOU THINK

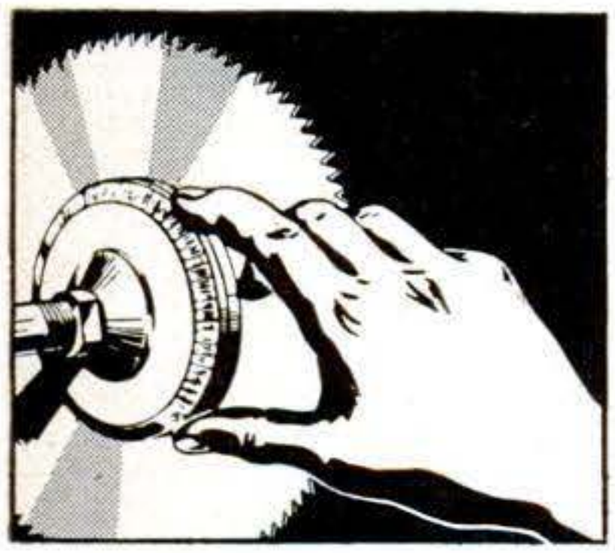
Corbin offers TOP VALUE in EVERY price range! Next time you need a padlock, remember that your Corbin dealer has a Corbin padlock to match your needs—for *security* . . . for *economy*.

Be sure . . . with CORBIN® at leading hardware stores everywhere

CORBIN CABINET LOCK Division
The American Hardware Corporation
New Britain, Connecticut

NOW—40 different cuts with AMAZING, NEW

Warren DADO SAWING WASHERS



ON YOUR SAW BLADE!

NO Warp . . .
NO Wobble . . .
NO Burning!

ONLY $4.95 PER SET

4 Washers Mean Perfect Balance

Make clean, smooth parallel grooves at any angle—no chewing, no sanding. Just dial your cut—no trick screws, no vibration, strengthens blade for straight cuts. Warren Washers greatest improvement in 30 years—and most copied—look for the name on the box and washers. It costs no more to get the best—WARREN, IT'S GUARANTEED! At your dealer or order direct. Give arbor size—½", ¾", ⅝", 1"—sent postpaid.

Send for Free Booklet

WARREN DADO SAWING WASHERS CO.
Dept. 42 • Box 98 North End Station
Detroit, Michigan

PORTABLE SPRAY OUTFIT

⅓ H. P. HEAVY DUTY MOTOR

Paint Sprayer mounted on 7½x25 inch tank, ⅓ H.P. 110 V. 60 cy. Heavy duty motor, 10 ft. cord and plug, V belt drive, Piston type Compressor with 2 Compression rings, 1 oil ring, 2 inch Bore, 1¾ inch stroke, displacement 2.86 C.F.M. at 60 lbs. pressure. Safety valve. External and internal atomizing gun, fan, round and angle spray nozzles; quart cup; maintains 35 to 40 lbs. working pressure. Oil and water extractor, 20 ft. heavy duty two-braid air hose with leakproof fittings. Complete with carrying handle. Wt. 75 lbs. Special Price Complete Outfit..... **$67.50**

Regular Price.....**$125**

Spray Gun Sold Separately...$12.95

Compressor sold separately, wt. 20 lbs.....$20.50

MODEL 200 COMPRESSOR
2½"x2". 2.55 to 4.80 c.f.m. up to 150 lb. pressure. Operates with ½-¾ HP motor. Special Price **$27.95**
Shipping wt. 24 lbs.

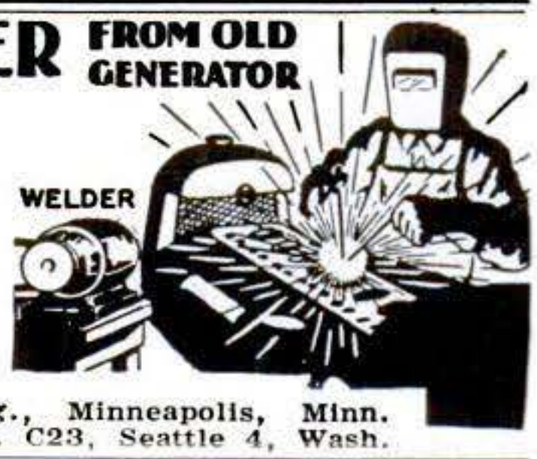
MODEL W7 COMPRESSOR
2 cylinder 2½"x2". 5.10 to 8.50 c.f.m. up to 150 lb. pressure. Operates with ¾-1-1½ HP motor. Special Price..... **$54.50**
Shipping wt. 45 lbs.

Send check or money order. Money back guarantee.
Send for FREE CATALOG of Light Plants and Air Compressors.

WELLWORTH TRADING CO.
1832 S. Wabash Ave., Dept. B-253, Chicago 16, Ill.

BUILD ARC WELDER FROM OLD GENERATOR

WE SHOW YOU HOW
Light or Heavy Work



Produces 75-200 amperes. Takes no previous experience or hard work to make one of these welders. Complete plans 35c. Send for your **PLANS** today and we'll include FREE our Big NEW Catalog listing hundreds of electrical bargains.

LEJAY MFG., 1323 LeJay Bldg., Minneapolis, Minn.
928 1st Ave., So. C23, Seattle 4, Wash.

Make Money Selling Eshelman Power Mowers Riding Tractors & Rotary Tillers

ESHELMAN ROTARY TILLER

ONLY $119.50

Turns virgin ground into a garden bed in one operation. Replaces plowing, discing, and cultivating. Women can operate it. Also POWER MOWERS & RIDING TRACTORS from $95. Free Catalog. Write nearest branch:—

ESHELMAN CO., Dept. R-19
119 Light St., Balto. 2, Md.
333 N. Michigan Ave., Chicago 1, Ill.
105 Lake St., Reno, Nev.

BRONZE FOUNDRY

Schools and Home Workshops

Make your own castings of aluminum, copper, bronze, silver. Foundry sets are available in three sizes including 2400 Deg. F. blast Furnaces, $22.50; $29.50; and $42.00, f.o.b. Kansas City. Free Circular.

KANSAS CITY SPECIALTIES CO. P. O. Box 6022, Dept. S-2 KANSAS CITY, MO.

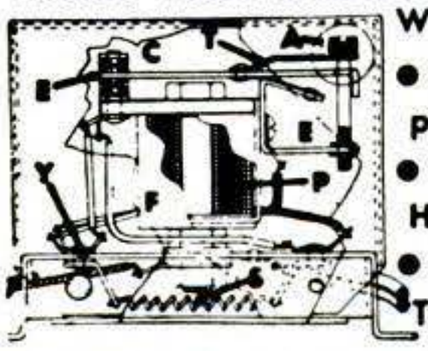
END GENERATOR REGULATOR BATTERY TROUBLE!

INSTALL TO YOUR CAR VOLTAGE REGULATOR

THE AMAZING NEW-ADJUSTABLE

SELECT-A-CHARGE REGULATOR

WITH REVOLUTIONARY NEW DASHBOARD CONTROL
GET MORE WATTAGE-POWER FROM CAR GENERATOR
DOUBLE YOUR BATTERY LIFE — DOUBLE YOUR BATTERY SIZE



With Charge Capacity and New Alert Life.

- **NEW ARC-LESS** — Control Circuit to prevent burning and sticking of contacts.
- **HIGH-WATTAGE SPARK** — To add Horse-Power to your Car Engine.
- **ADJUSTABLE CHARGING VOLTAGE** To fit City Driving, Long Trips, - - - - - - - or Extra Heavy Winter Duty.

★ **EMERGENCY POWER** To continue Trip in case of a broken Battery — Terminals — Cables or lost or stolen Battery.

LIFE-TIME GUARANTEE — FREE BULLETIN — WRITE:

SCIENTIFIC ELECTRIC CO. BOX 2162-P CLEVELAND 8, OHIO

Copyrighted material

Guided Missile Filter CAN NOW BE USED IN YOUR CAR!

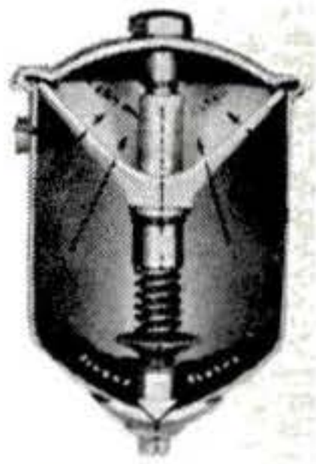
Complete filter assembly (give make of car) **$12.95**

Permanent Element only (To fit in your present filter case).... **$6.95**
(Give make and model of car and present filter.)

STOP THROWING MONEY AWAY!

NEW "LIFETIME" OIL FILTER CARTRIDGE

NEVER NEEDS REPLACING!
FULL 10 YEAR GUARANTEE!



The sensational "LIFETIME" oil filter forces all your oil through a porous bronze filter element which never wears out. It filters out dirt particles as small as 39/millionths of an inch as soon as your engine starts and allows no oil loss or bypass regardless of engine temperature. It saves the quart of oil soaked up by ordinary filter elements and does not absorb valuable, protective oil additives. "LIFETIME" pays for itself over and over by saving oil, engine repair, and ending the expense of stock filter element replacement. Fits all cars and light trucks. To clean, just rinse the bronze cartridge in gasoline.

(Above prices postpaid or send $1.00 deposit, balance C.O.D.)

"BRAKE-KOTE" Armor-Plates Linings—DOUBLES Brake Life!

- ✓ *Stops Overheating*
- ✓ *Increases Lining Life*
- ✓ *Stops Brake Squeaks*

BRAKE-KOTE is the sensational new silver, copper and lead brake conditioning compound. This super-durable coating provides a friction and temperature regulating "armor" that permanently impregnates the brake lining and drums. BRAKE-KOTE doubles the life of brake lining, reduces heating, prevents brake fade, and reduces dangerous brake failure—brakes that fail or pull endanger your life!
BRAKE-KOTE pays for itself by doubling brake life—by minimizing brake maintenance expense . . . and by giving you smoother, safer braking.
Do It Yourself—just pull the brake drums and "paint" the linings with self-hardening BRAKE-KOTE. Users claim one treatment lasts up to 30,000 miles of average driving. Complete Kit—Only **$4.95** postpaid .....

SAVE GAS

with a Fuel Pressure Regulator!

STOP: ✓ Power Loss ✓ Fuel Waste ✓ Flooding ✓ Stalling

MANY USERS CLAIM UP TO 25% BETTER MILEAGE as the revolutionary "GANEMASTER" regulator stops gas waste caused by excessive fuel pump pressure. It eliminates carburetor overflowing and dangerous fire hazard. Stops fuel "surge" and the annoyance of "motor cut-out." As this precision regulator s-m-o-o-t-h-s fuel flow, it also prevents vapor lock and percolating. "GANEMASTER" pays for itself ten-fold with gas savings, by reducing frequent carburetor adjustments and engine and carburetor wear. Fits all cars and trucks. 15 day "money back" guarantee! **postpaid** **$7.95**
(Or send **$1.00**, balance C.O.D.)

NEWHOUSE AUTOMOTIVE INDUSTRIES Dept. AX-2, 5805 E. Beverly Blvd., Los Angeles 22, Calif.
World's Largest Distributors of Speed-Power-Economy Equipment

---

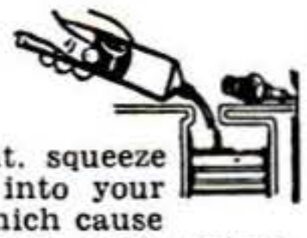
OVERHAUL YOUR MOTOR *in 10 minutes*

WITH A MOTOR RENEW TREATMENT
- ✓ STOP OIL BURNING
- ✓ RESTORE COMPRESSION
- ✓ STOP PISTON SLAP

CLEANSE with "MOTOR PURGE"

In the FIRST step of the famous Motor Renew treatment, the "Purge" formula cleans, quiets and frees rings, valves and pistons from efficiency and power robbing carbon, gums and varnish. Pour this miracle solvent into the cylinders, run your motor and watch the combustion residue billow out your exhaust pipe.

RENEW with "COMPRESSION SEAL"

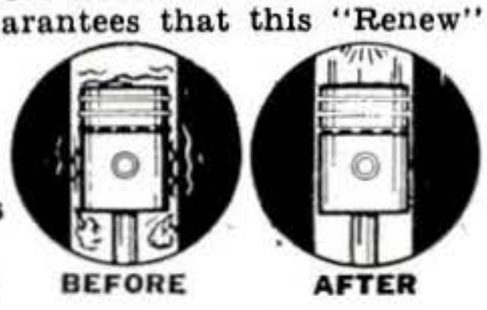


As the 2nd step of the Renew treatment, squeeze this self-expanding mineral compound into your cylinders where it can fill worn spots (which cause compression leaks) between cylinder walls and pistons. Thus it restores compression, cuts oil & gas waste and eliminates costly engine overhaul and ring jobs. Get new power, speed and economy with Compression Seal.

100% MONEY BACK GUARANTEE!

A $75,000 insurance policy guarantees that this "Renew" treatment will not harm the finest engine.

DEALER INQUIRIES INVITED!
FREE Auto Manual With Each Order!
Kit treats all cars and trucks
$6.95 POSTPAID (Or send $1 deposit, balance C.O.D.)



CONSOLIDATED ENGINEERS, Dept. PSK-2
10407 W. Washington Blvd. Culver City, Calif.

Increase "gas" mileage!

10 DAY FREE TRIAL IN YOUR CAR

This new air-bleed idling jet replaces present solid idling adjustment screw in your carburetor. The object is to lessen the vacuum in the idling channel by bleeding air during high manifold vacuum periods and thus, try to increase Your Gas Mileage. ABOUT 1/2 MILLION NOW IN USE. Most users who write us swear by them and some report up to 25% more mileage. Many comment on Smoother Motor, Easier Starting, Faster Pick-Up, Better Idling. But some swear at them with "No Improvement" and fire "the little stinkers" back—proving Gane's can and do sometimes fail completely. So we invite you to try "the little stinkers" at "no cost", to see what they will do for you. Make NO deposit. Send NO money. Pay postman NOTHING. There are NO reservations, qualifications nor restrictions to this TRY BEFORE YOU BUY—10 DAY FREE TRIAL OFFER. Just mail this coupon today. GANE NEEDLES, with literature, will be promptly sent you postage paid. You, or your service station, can quickly make the simple, easy installation.

USE GANES 10 DAYS—Check for increased gas mileage which must average 2 or more extra miles per gallon. At the end of ten days send us only $1.50 per Gane Needle in check, currency or stamps or else send them back and owe nothing!

Mehren Industries, National Automotive Retail Division
Dept. GS-2, 9909 Santa Monica Blvd., Beverly Hills, Calif.

Name .....
Address .....
City..... Zone.... State.....
Year & make of car..... .....No. cyl.....

Copyrighted material

Made $2,600 LAST SEASON

with FOLEY LAWN MOWER SHARPENER

99c Profit On Each Dollar!

It costs less than 1c per mower for electricity and material. The Foley sharpens all blades and cutter bar together **just like lawn mower manufacturers do it.** Start in spare time in basement or garage. The Foley handles up to 3 or 4 mowers per hour—prices run $1.50 to $3.00 for hand mowers—$5.00 to $8.00 for power mowers.

FREE—VALUABLE ILLUSTRATED BOOK shows how to sharpen all leading makes of power mowers. Foley prices are low—easy payments available. FREE PLAN tells how to start. Send coupon today—no salesman will call.

"Last year we sharpened and repaired about 1000 lawn mowers for a net profit of $2,600," says E. G. "In 1939 I bought a Foley Lawn Mower Sharpener," writes W. T. J., "the best investment I ever made. I have made a good living for my wife and myself, and have put money in the bank besides."

SEND FOR FREE BOOK

FOLEY MFG. CO., 208-3 Foley Bldg., Minneapolis 18, Minn.
Send FREE BOOK and FREE PLAN on Foley Lawn Mower Sharpening business.
Name.....
Address.....

1903—GOLDEN ANNIVERSARY—1953

SHAW "DU-ALL"

GARDEN AND SMALL FARM TRACTORS

Low Cost 1½ to 5 H.P. Walking Models Do All Garden and Yard Work ..Fast, Easy

5 H.P. Walking Model with 10-inch Plow

Plow with a 6-7-10 inch plow ... plant, cultivate ... mow, bulldoze, saw wood ... do many other jobs with the Shaw Du-All. 1½, 2½, 3, 5 H.P. machines. Variable speeds, adjustable wheel widths, individual gang tool controls. Power take-off pulley and attachments. Power turn models available.

Powerful 5-8-12 H.P. Riding Tractors, Ideal for Larger Acreage

Famous Shaw design provides lowest cost power for small farms. Handle 10, 12, 14-inch plows. Work 4 to 8 acres daily. Handle all ground preparation and cultivation ... mow, rake, cut wood, spray trees, do many other jobs with power take-off. See the Shaw dealer. Write direct for **FREE CATALOGS** low prices complete Shaw line.

12 H.P. Riding Tractor with 12-in. Plow

SHAW MANUFACTURING CO.
5702 Front St., Galesburg, Kansas
668-PS N. 4th St., Columbus, Ohio

BARRON Drill Press TOOLS

ROTARY PLANER

Planes • Rabbets
Tenons • Panels
Routs • Bevels

Only $7.50 COMPLETE

FOR WORKSHOP AND INDUSTRIAL USES...

● Over 40 precision built woodworking tools and accessories ... Hi-Speed Router Bits—Rotary Surface Sanders & Drum Sanders—Safety Shaper Cutters—Dovetail Cutters—Large Auxiliary Metal Tables—All Metal Shaper Fences — Spindle Adapters — Handy Bench Vises. Many other items indispensable for accurate, useful, versatile workshop use. Every tool sold on complete satisfaction or your money back. See your Barron Dealer. Ask for special folder — "24 Extra Uses for Your Drill Press."

FREE Workshop Guide & Catalog

BARRON TOOL CO. INC.
366 Architects Bldg., Detroit 1, Mich.

Amazing Midget Wrist Radio

$2.98

Complete Postpaid

Enjoy music, sports, programs with your own private, portable Wrist Radio! Use indoors or outdoors! Brings in local stations up to 50 miles! Worn like wrist watch, yet receives regular radio stations. Has super-sensitive crystal diode (worth $1.95 alone!) & needs **NO BATTERIES! NO TUBES! NO ELECTRICAL PLUG-INS!** Lasts for years with **NO EXPENSE!** Built-in earphone. Complete with 2 clips. Just connect & set is ready for use. About 2½-in. diameter, colorful plastic case, adjustable im. leather band. Only available at this low price while war-surplus diodes last so **order now!** **$2.98**
(2 for $4.98) EACH COMPLETE POSTPAID ONLY.....

JOHNSON SMITH & CO., Dept. 645, Detroit 7, Michigan
Send 10c for Catalog of 3000 Novelties, Gadgets, Funmakers

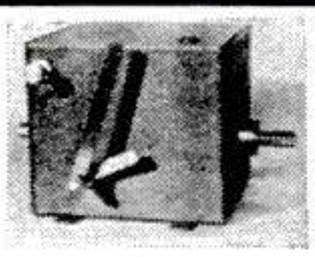
ONE-MAN SAWMILL LOW AS ... $50.00 DOWN

Take BELSAW Portable Sawmill right to the trees—turn out valuable lumber for local yards—do "custom sawing" for neighbors. BELSAW lasts a lifetime. No crew needed. Power with old auto engine. Beginners get excellent results. Send postcard for FREE BOOK, "How To Make Lumber."

FREE BOOK

BELSAW MACHINERY CO
8464 Field Bldg. Kansas City 11, Mo.

VARIABLE SPEED HYDRAULIC POWER TRANSMISSION



It has Infinite Speeds 0 to 550 Reverse Automatic Overload Protection; Adjustable Torque up to 180 inch pounds. 5/8" Input and Output Shafts. It will handle 1/4 to 1½ H.P. Motor. Case measures 7½" long 7" high 6½" wide. VALUE OVER $300. Shipping Wt. 25#. On C.O.D. Orders we require a 10% Deposit.

only $54.50 Fob. Chicago

DIRZIUS MACHINE SHOP "W" 1423-25 So. 52nd Ave., Cicero 50, Ill.

How to cut glass

FREE

Simple instructions make glass cutting sure and easy. Free book tells how, shows in pictures. Limited printing. Free copy is yours if you write now. Send handy coupon today!

MAIL THIS HANDY COUPON RIGHT AWAY

Red Devil Tools, Irvington 11, N. J.
Please send free copy of Booklet HT-132
NAME_____
ADDRESS_____
CITY_____STATE_____

Copyrighted material

Palley's

SAVE UP TO 85% IN WAR SURPLUS

ORDER BY MAIL!

TERMS

ORDER FROM THIS AD.. Pay by M.O. or Check. P.O's accepted from well rated D & B firms. 50% deposit required with all C.O.D's. All prices are F.O.B. our warehouse, Los Angeles, Calif.

SAVE ON MICROSCOPES

100-200-300 POWER MICROSCOPE

Has a triple objective revolving turret. Extra fine micro adjustment. Adjustable plano substage mirror. Body inclinable through 90° for microprojection. In dovetail hardwood wood case. . . . . .

NEW 13.95

POCKET MICROSCOPE

NEW 50 POWER

A Palley Bargain! Has extremely sharp 50 Power magnification. Compact, clips into pocket. Has a four lens compound optical system. Now you can examine insects, stamps, minerals, gems, etc. Comes ready to use. 3.49

NAVY PHONE SET

Used by the NAVY for Flight Deck and Gun Control. An ideal emergency communication system because each set is 'sound-powered'—no power supply needed. Perfect for office-to-shop, house-to-garage or barn, or any point-to-point within the radius of 1/2 mile. Each set includes 2 phones on chestplates, 2 headsets, button switches and approx. 35 ft of cable. . . . . 9.95 SET

One Phone and headset . . . 5.95 EACH

2-WAY TELEPHONES

Install this set of desk phones for perfect two-way communication from any two points up to 100 ft. apart. This handsome set is finished in a blue baked enamel Has 2 phones, wire and simple hook-up instructions. Operates on ordinary flashlight batteries. Here is an ideal set for use room-to-room, garage-to-house, barn-to-house, darkroom-to-outside, office-to-office, office-to-shop, etc. Order Today—ONLY. 7.50

MARCHING COMPASS

Officer's type with a prismatic hair-line guide for sighting at distant objects, and at the same time reading degree of setting. Accurate & dependable. Has a jewel mounted needle—luminous dial for night reading. A $5.95 value 3.95

POCKET HAND WARMER

For Skier, Hunter, Fisherman, etc. Will maintain temperature of 100° from 16–24 hours by radiation. Uses pocket-warmer fluid, lighter fluid, or white gas as fuel. Has a chrome finish. Complete in velvet pouch. 2.25

NEW AIR PISTOL

A revolutionary .177 caliber sports pistol. Designed to look and feel like a .45 Automatic. Easy to load, cock and fire. All metal—not a toy. Has front and rear sights. Man size grip. Shoots .177 caliber BB's or Darts. Ideal for small game, indoor or outdoor targets. Comes with supply of BB's and Darts. NEW! ONLY 5.95

OTHER AIR PISTOLS available in .177, 22. cal. or BB. Send us your requirements.

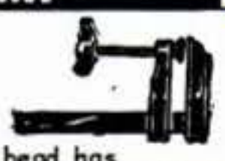
Inside-Outside VERNIER CALIPER

Made in Germany by one of Europe's leading specialists in precision tools. Will measure inside—outside—depth in .001 to 6 inches in 1000ths and 1/10mm to 150mm in 10ths. 9.75

NEW! GUARANTEED!

MICROMETERS—Measures 0" to 1" in 1000 ths. Has lock-nut and ratchet 9.75

BENCH CLAMP



Carpenters, Cabinet Makers, Wood Workers—here's a real SURPLUS BARGAIN for you. All steel, sturdy and dependable. Will open to 8" with a 2-3/4" thumb screw. Sliding head has a flat spring, also two gripping blocks of hardened steel working above and below the bar; this insures positive grip. Depth 4" 1.59

Genuine Army Type B9 PARKA

Outside made of extra heavy mountain cloth with full Beaver Fur, Parka Hood which completely protects the head and face. Hood has adjustment for perfect fit. Lined chin protector and button-down neck closure. Coat is full cut with an elastic inset for snug fit. Has two, deep slash breast pockets and two roomy side pockets. Waist length zipper is covered by an outer, button down storm flap. Body is lined in double thick, 100% wool with quilted rayon covering. O.D. color. SMALL; MEDIUM; LARGE sizes. 28.50 NEW

"Blue Bunny" FLYING SUIT

For WINTER SPORTS, HUNTING or "BUNDLING". As coveralls for cold OUTDOOR or FARM WORK. It is 100% woven wool with an extra flannel inner-lining for double warmth and utility. Has wiring so fine, flexible, it does not interfere with movements. Can be used with or without heating or can be plugged into car, tractor or Truck battery. Sizes 36 thru 44. 4.95

LEATHER MITTENS

Fleece lined. Outside cover is quality leather. Ideal for all types of winter work. Size: small, med., lg. 2.69

Air Corps Type LEATHER CAP

Special! For Hunter, Camper, Farmer. All leather with soft chamois lining. Has turn-down ear flaps, covered with warm sheepskin for added ear protection. Leather covered, long billed visor. Sizes: Small, Med., Large. 2.59

SHEEPLINED BOOTS

A REAL BARGAIN! All NEW! 100% waterproof & designed to be worn with or without shoes. Lined throughout, including tongue, with soft fleece sheepskin Water repellent leather uppers with waterproof rubber lowers. Heavy non-skid tread on soles. Full zipper closure. Height approximately 12". SMALL, MED., LARGE 13.95

LUND TRAILWAYS SNOW SHOES

Genuine LUND Snow Shoes. Have one-piece, special hardwood frames. Lacing is top quality, water-proof, rawhide thong. Specially designed for faster, easier travel. Size: 10 x 52. A real $20.00 value for ONLY 14.95

SKI POLES

Natural cane or laminated steel poles. Leather laced, metal snow ring. Pole is metal tipped. Has leather wrist strap. Length 4 feet. ONLY 3.95

230 PAGE CATALOG

1000's of ITEMS! Fully ILLUSTRATED! For the MECHANIC, SPORTSMAN, HOBBYIST, HOME OWNER, etc.

War Surplus — Factory Closeouts and General Merchandise Values! Save on Hardware, Hand and Power Tools, Gadgets, Sports Equipment, Hydraulics etc. **SEND 25¢ for HANDLING & MAILING.**

SAVE ON SURPLUS MOTORS

606 DELCO MOTOR

1/50 HP, 24V, DC, 1/6 amp. turns 3000 RPM. Has adj. overspeed contactor to stabilize and control speed—Length 5½" 4.95

SURPLUS ½HP MOTOR

No. 500—Used—1/2 HP—27v, DC-AC. This motor can be readily adapted to deliver up to 1/2 HP on 110 volts AC, by the simple method of rearranging armature brush-leads. Free diagram with each order. Supply is limited so order today. A SENSATIONAL VALUE. 5.95

1/5 HP SAMSELL MOTOR

27 volts, 16 amps., 1/5 HP, reversible, series wound motor. 3800 RPM, shaft 9/32" diam. 12" spline. 4-1/8" x 2-3/8". NEW—ONLY . 3.95

4 TAKE-OFF DRIVE UNIT

All four drives turn in unison from the common power input. Drive is adaptable to use with 9/32" flexible drive shafts and accessories. Many uses where one to four take-offs are desired. This item is worth at least twice our price. 3.75

RADIO BARGAINS

Signal Corps TELE. KEY

ARMY SURPLUS

The new model J5A with ball type flame-proof, metal key. Perfectly balanced to permit positive contact with minimum effort. An ideal instrument for "ham" or professional use. A BUY at . NEW 1.89

USAF THROAT MICROPHONE

Genuine USAF type T-30-0. Gives clear, distinct voice reproduction for aircraft or the amateur broadcaster. Set consists of two microphones, mounted on rubber neckpiece which is fastened to elastic neck band. Operates on between 100 and 300 ohms. 1.39

NEW RADIO SPEAKERS

Ideal for small radios, inter-com systems, test equipment, etc.

ALNICO—Permanent magnet type. 4" diam. 2 wire hook-up. NEW 2.49

DYNAMIC SPEAKER—10" with plug-in and transformer. 2.95

PERMANENT MAGNET SPEAKER—12" diameter. 2 wire hook-up. 4.25

16MM SURPLUS MOVIE CAMERA

The 'Gun Camera' used by the Navy & U.S.A.F. Electrically operated. Ideal for the amateur or professional movie maker. Lens is a 1-3/8" (35mm) withaa built-in exposure guide and shade. Adjustable for THREE SHUTTER SPEEDS—16, 32 and 64 frames per sec. Uses regular Eastman (50 ft.) magazines. Comes complete with ZOOM viewfinder and battery box. Requires no winding—operates on 24 volt current upplied by ordinary dry cell batteries carried in box that clips on belt. Takes excellent Black & White or Full Color films. Cost Gov't approximately $300.00. 49.95

CONVERTED MODEL—Rebuilt with a special "C" mount adapter for any standard 16 mm Movie Lens. 59.95

FILM (50 ft.) B&W—$3.00 Set of Batteries—$1.79

NEW PIANO HINGE

1¼" x 53½" Cad. Plated Steel . .	89c
1¼" x 72" Aluminum	1.29
3½" x 54" Stainless Steel	1.95

PALLEY SUPPLY CO. Dept. PS-2, 2263 E. Vernon Ave., Los Angeles 58, California

Copyrighted material

[Continued from page 272]

verter is at its worst on gas consumption in stop-go driving. Now, the gear reduction in the gearbox and torque converter "at stall"—at the moment the car starts to move—is 3.8 to 1 to give maximum miles-per-gallon in city driving. That's greater, by the way, than the reduction in low gear in the Chevrolet standard transmission—2.94 to 1.

More Power for Passing

As in all torque converters, the gear reduction (or torque multiplication) rapidly decreases as the car gains speed. At the up shift the torque converter is still multiplying the effort of the engine, but presently engine and propeller shaft are turning at approximately the same speed.

The revised transmission includes a converter with a diameter 1⅛ inches greater to transmit more power for passing on the highway. But its economy will be its biggest appeal. Only a hot-rodder won't be able to get two to four more miles to the gallon out of a '53 Chevrolet over a '52.

The brakes are a lot softer now. The engineers did that simply by reducing the diameter of the master cylinder by an eighth of an inch. This puts a third more pressure in the hydraulic lines for any given amount of push on the pedal.

The new Chevrolet has other refinements. To eliminate the necessity of replacing the whole exhaust pipe when the back end rusts out, Chevvy now provides a 12-inch section of aluminized steel tube in this troublesome department. The flasher indicators for the turn signals have been transferred from the steering column to the dash. Tail, stop and turn lights are enclosed in one housing. An automatic headlight dimmer is optional. All models, Powerglide or no, have automatic chokes.

Body Looks Bigger

The car has a bigger, more massive look: the company invested millions of dollars in a complete new set of body dies. The hood is flatter, the fenders longer. There is more glass area. All models in the two top lines have wrap-around rear windows. The amount of added trunk room, achieved by doming the lid, is astonishing.

But the big news is still under the hood. The guy who made that secret test run to the top of Pikes Peak last summer had to sweat out an equally secret run in 110° heat on the Arizona desert a week later. He tells me the car worked like a charm there, too. END

FACTS ON '53 CHEVROLET

Model: 210 series 4-door sedan.
Engine: 6-cyl. valve-in-head; 115 hp. at 3,600 r.p.m.; compression ratio, 7.5:1; piston displacement, 235 cu. in.; piston travel (in feet per car mile at 20 m.p.h.), 1,742; bore and stroke, 3 9/16" by 3 15/16"; crankshaft bearing surface, 29.8 sq. in.; torque, 204 lb.-ft. at 2,000 r.p.m.
Weight: 3,515 lb.; per hp., 30.5 lb.
Transmission: Powerglide torque converter; rear-axle ratio, 3.55:1.
Steering ratio: 17.4:1 (power steering); radius of turning circle, 18¾'.
Effective brake-lining area: 158 sq. in.
Springs: front, coil; rear, semi-elliptic.
Outside dimensions: height, 62⅞"; over-all length with bumpers and guards, 195½"; width, 73 29/32"; wheelbase, 115"; overhang, front 32 9/16", rear 47 15/16"; tread, front 56 11/16", rear 58¾".
Inside dimensions: seat-cushion width, front 59 29/32", rear 60½"; leg room, front 42⅞", rear 41½"; headroom, front and rear 35¾"; seat height, front 13 7/64", rear 12 39/64"; vertical distance, steering wheel to seat cushion with seat in mid-position, 4⅜"; front-seat adjustment, horizontal 4⅜", vertical ½".
Tire size: 6.70 by 15.

Move to the Rear, Please

FREQUENTLY people give the bus drivers a pretty rough time in their refusal to move to the rear.

However, one member of the fraternity has found a satisfactory solution.

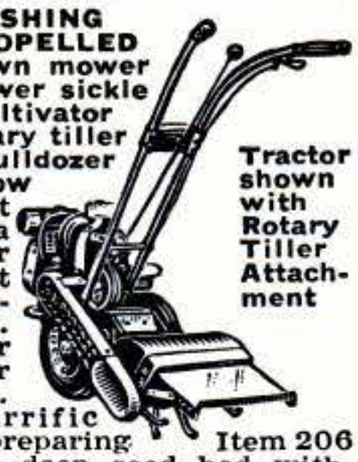
As the bus becomes crowded, this poker-faced driver chants in his nasal monotone: "Ladies and gentlemen, move to the rear, please." Then he adds significantly, "The rest of you stay up front with me."—*McCall Spirit.*

Copyrighted material

BEDROCK FACTORY PRICES
SAVE MIDDLEMAN PROFITS

MASTER GARDENER

NO PUSHING
SELF-PROPELLED
It's a lawn mower
It's a power sickle
It's a cultivator
It's a rotary tiller
It's a bulldozer
It's a plow



Here at last is a power unit that does everything. Works for you year 'round. Does terrific job of preparing mellowed deep seed bed without labor. Built-in power take-off to drive pumps, saws, generators, etc. Safety clutch — can't burn out. More versatile and efficient than tractors costing twice as much. Basic self-propelled 2 hp tractor with Briggs or Clinton famous engine. Only **$119.50** Item 206 Snow Blow...**$39.50**; Rotary Tiller...**$42.50**; Sickle Bar-Mower...**$42.50**; Furrowing Tool...**$8.75**; Bulldozer... **$11.25**; Lawn Mower Hitch... **$4.50**; Cultivator...**$8.75**; Disc Harrow...**$15.75.** Freight prepaid to most areas. Easy payment plan available.

HEATING & VENTILATING FAN

(Item 10) Easily installed in furnace pipes. Forces even heat to all rooms. Over range, removes kitchen smoke and odors. Powerful continuous duty motor, 110-120 v. A.C. Quiet, super efficient fan moves huge volume of air (400 to 600 c.f.m.) 8" Fan, wt. 5 lbs., $6.85; 9" Fan, wt. 6 lbs., $7.85; 10" Fan, wt. 7 lbs., $8.85; 12" Fan, wt. 8 lbs., $9.85.
HEAVY DUTY 12" fan, enclosed motor, suitable for spray booths, restaurant exhausts, poultry houses, and other difficult applications. Wt. 10 lbs. Item 10D....**$12.95**

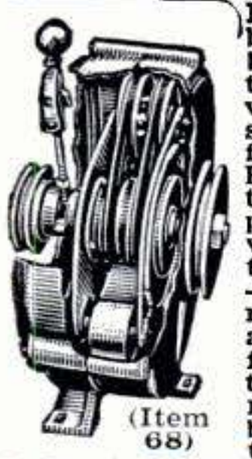
RUBBER HOSE

New genuine Neoprene Hose—outlasts ordinary rubber 3 to 1. Reinforced with super tough cotton cord plies. Flexible. Easy Flo brass couplings with standard pipe threads for quick connections, included. Pump water for irrigation, stock tanks, home, barn, fire fighting, etc. Pump Gas or Fuel Oil. Save more than 60%.

In. Diam.	1"	1¼"	1¼"	1¼"	1½"
Length	10 ft.	25 ft.	50 ft.	100 ft.	30 ft.
Price	$5.95	9.25	24.75	49.95	14.75

If specified we will send special hose for gas or oil at same prices.

Variable Speed Selector


(Item 68)

Heavy duty, made by **B. F. GOODRICH** for industrial use. Provides instant speed changes for any drive. For machine tools, dryers, printing, conveyors, production lines, hoists — any operation requiring variable speed. Ideal for midget autos. Employs reliable "trouble free" planetary system. No hydraulic power losses or creeping. Infinite range, smooth operation, easy installation (data included). 3 sizes: ½-1 hp. wt. 36 lbs.; 1-2 hp. wt. 55 lbs.; 2-3 hp. wt. 105 lbs. Reg. list $228, $252 and $352. Our prices . . . **$79.50, $89.50** and **$114.50.**

HYDRAULIC JACKS

Heavy duty, precision built, smooth, positive acting with built-in relief valve. Hi-Lift with screw extensions. Govt. surplus at a fraction of orig. cost. (Handle included.)
1½ ton (Item 208) Wt. 11 lbs.....**$6.45**
3 ton (Item 208A) Wt. 15 lbs..**$9.45**
5 ton (Item 208B) Wt. 17 lbs.....**$11.45**

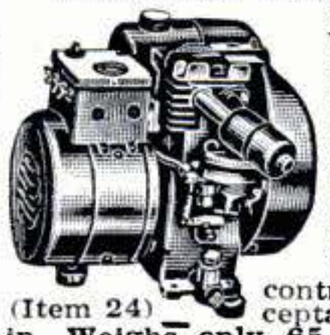
COMMANDO MOTOR BIKE

Speed to 40 M.P.H. Travels on Any Kind of Road. Amazing 5 Yr. Guarantee

The Commando Motor Bike is new throughout. Advanced engineering—Automatic Clutch provides quick acceleration and easy hill climbing—yet motor idles at will when you stop. No belts or chains. Rugged lightweight 2-cycle engine delivers dependable power with long life. Transmits power direct to rear wheel with modern Dynarotor. Easy automatic pedal or pull starting. Special control permits pedalling if desired. Perfect balance and comfort. Anyone can ride a Commando Motor Bike—safe and easy. Rear mounting of motor eliminates hard steering, dirt, fumes and heat. Really trouble-free! Rugged heavy duty cycle, custom built by famed Schwinn. Ride for health and pleasure; ride to work or school; make deliveries. Order now. Easy payments available. Ask for free circular.
Commando Motor Bike Town & Country Cruiser Model . . . 1 cyl.—1½ hp. motor, complete—no extras to buy..... **$199.50**
Commando Motor Bike Super Chief Model . . . Motor cycle-type 24" wheels; large flange-type brakes; heavy spring fork; powerful Commando twin cylinder 3 hp. motor. Complete—no extras to buy..... **$249.50**
EXTRA! Convert your own pedal bike into a motorized miracle in one hour with a Commando Motor. Complete with easy-to-follow fittings and instructions. Commando Captain Bike Motor, single-cylinder, 1½ hp., Wt. 35 lbs. Complete—nothing else to buy. Item C90. Factory Price **$125.00**
Deluxe Twin-Cylinder Commando General Bike Motor, 3 hp., Wt. 42 lbs. Item C91. Factory Price..... **$149.50**
Dealers: Send for our special proposition

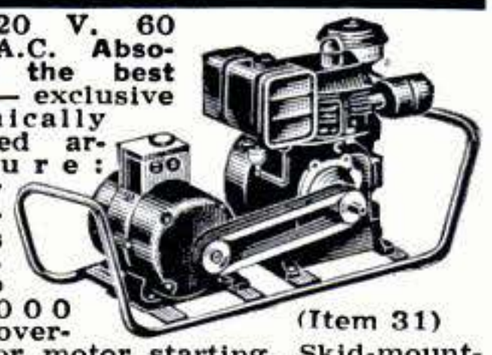
WORLD'S FINEST GUARANTEED LIGHT PLANTS

PORTABLE LIGHT PLANTS


(Item 24)

350 watts—115 v. D.C. powered by a sturdy, easy-starting 1½ hp. Briggs engine, perfect for lights, radios, razors, etc. in cabins or trailers. Use standard light bulbs. Built-in control box with receptacle — just plug in. Weighs only 65 lbs. Item 273. Reg. price $199.50. A terrific value at..... **$99.75**
PUSH BUTTON START A.C. PLANT 500-700 watts—115 v.—60 cyc. A.C. Powered by a rugged 2 hp. easy-starting Briggs gas engine. No wiring necessary, just plug in and operate. Plenty of current for any oil burner, freezer, brooder, emergency lights, etc. which require up to 700 watts. Ideal for Fire Depts., trailers and camps. Complete with Voltmeter and built-in winding to charge 6 v. auto batteries. Item 24. Wt. 85 lbs. Fully Guaranteed. **Be prepared if war or storm knocks out power lines.** Reg. $275 value. **$143.50**
1000-1200 Watt Plant (Item 45) same as Item 24 but larger generator and engine... **$199.50**

GIANT 2000-2500 WATT PLANT

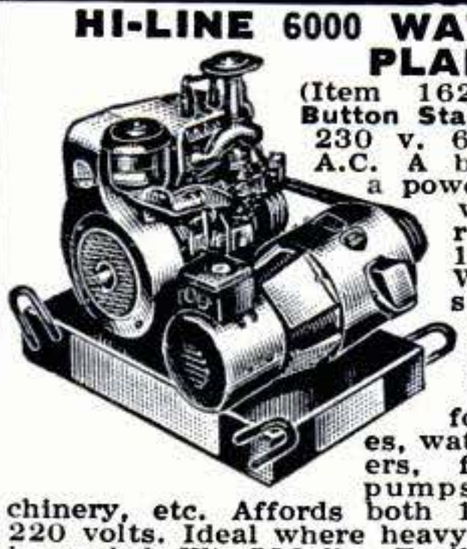

(Item 31)

110-120 V. 60 cyc. A.C. **Absolutely the best made** — exclusive dynamically balanced armature: heavy windings develop up to 5000 watt overload for motor starting. Skid-mounted—portable. Powered by easy starting Briggs or 6 hp. Wisconsin engine—complete with all accessories; engine easily disconnected for other uses. Big outlet box, voltmeter, no wiring necessary. Ample current for all purposes. Factory warranty and complete instructions included. Wt. 220 lbs. Reg. price $585.00. Special at.... **$299.50**
With Electric Self Starter..**$359.50**
Generator Only and control box. Drive it with your engine or tractor **$169.50**

3000-3500 WATT PLANT

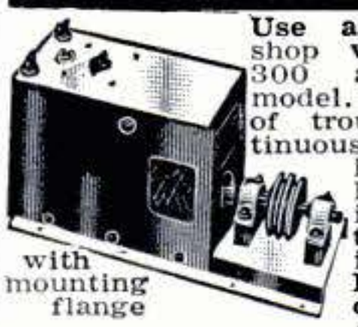
(Item 198) 110-220 v.—60 cyc. A.C. with Wis. Engine. **Push button start.** Wt. 370 lbs. Heavy duty....**$399.50**
Generator only for belt drive, Wt. 115 lbs. (Item 198A).....**$239.50**

HI-LINE 6000 WATT PLANT



(Item 162) **Push Button Start,** 115-230 v. 60 cycle A.C. A brute of a power plant with a rugged 13 hp. Wisconsin engine. Plenty of electricity for ranges, water heaters, freezers, pumps, machinery, etc. Affords both 110 and 220 volts. Ideal where heavy current is needed. Wt. 590 lbs. Easily worth $995.00. **With self starter.** Factory price... **$645.00**
Generator and control box only, belt driven. Use your own engine or tractor. Wt. 240 lbs. (Item 163) Factory price. **$345.00**

HEAVY DUTY D-C ARC WELDER

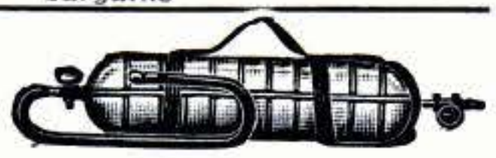

with mounting flange

Use as portable or shop welder. Up to 300 amps. Senior model. Made for years of trouble-free, continuous service. Will handle light or heavy jobs. Easily welds up to ¾" plate using ¼" rods. Built-in air cooling system. Arc is easy to strike and hold, because of specially designed arc stabilizer. Hi-lo switch and dial control gives wide range of welding heats. Run welder at 2600 rpm. with tractor, jeep or 15 hp. gas engine, or 7 hp. elec. motor. Complete with instructions, guar. and double V belt or flat pulley. You can pay more, but you can't buy a better welder. (Item 38) Wt. 110 lbs. $400 value at..... **$99.75**
DUAL CONTROL MODEL same as above but with built-in dual rheostat for low heat soldering, brazing, welding. Spec.. **$119.50**
WELDING KIT. Two 10 ft. leads, welding helmet, electrode holder, ground clamp. Sold only with welder at..... **$10.50**
Write for prices on A.C. Arc Welders.

Factory Prices on Catalog Items

Send 10¢ for **BIG 1953** catalog. **Hundreds of** bargains

CARRY-AIR



(Item 32) Stainless steel tank — capacity 500 cu. in. at 400 lbs. press. complete with inlet and shutoff valves, press. gauge, detachable air hose, tire chuck. Fill at any service station. Carry air for tire inflation, blowing out lines, etc. One emergency pays back cost. Wt. 10 lbs. Worth $20.00. Our price.....$8.95
(Item 55) With big double tank (1000 cu. in.).....$11.95
(Item 58) Tank only, 500 cu. in. (no fittings).....$5.95

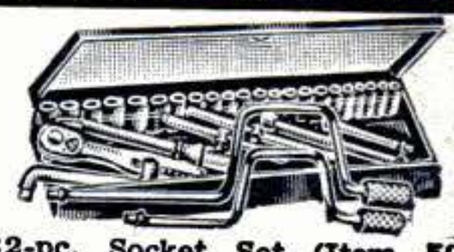
EXTENSION CORD

(Item 16) 40 ft. heavy duty, made of specially insulated No. 14 2-conductor wire. So tough that you can drive over it and yet flexible and easy to handle. Resists oil, grease or water. Extends electricity up to 400 ft. without voltage drop. Use indoors or out. Complete with heavy rubber plug and outlet. Wt. 2½ lbs. Usually $4.50—Special 40 ft.....**$1.99**
Comb: 2-40 ft. and 1-20 ft. (total 100 ft.).....**$4.95**
100 ft. length (one piece) **$4.85**
WIRE ONLY (Item 50)
No fittings. 100 ft..... **$4.00**

Heavy Duty Power Cable

#12—2 Cond.—stranded, very flexible, rubber covered, special outside conductor for grounding power tools, etc. Finest heavy duty power cable made. 50 ft. (Wt. 8 lbs.) Item 199..**$6.95**
100 ft. (Wt. 16 lbs.) Item 200.....**$12.95**

32 Pc. SOCKET SET



32-pc. Socket Set (Item 59) Highest quality guar. non-breakable sockets made by Husky. Beautiful, matched chrome alloy, absolutely the best. Complete range of 21 sockets from ¼"thru 7/16" in ¼" drive and 7/16" thru 1-1/16" in ½" drive; 2 extensions, reversible ½" ratchet, adaptor bit, slide head, all angle coupling, 2 end wrenches, ½" speeder handle and sturdy metal tool box. For prof. mechanics who want the best. Wt. 14 lbs. Easily worth $41.50. While they last only..... **$16.95**

45 Pc. SOCKET SET

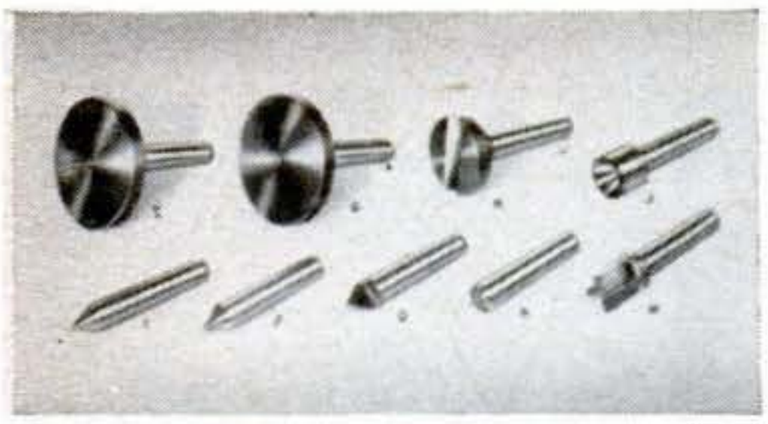
(Item 205) Contains a complete set of sockets in ½" drive, ⅜" drive and ¼" drive, plus all necessary extensions, handles, speeders, reversible ratchets, etc.; all uncond. guaranteed against breakage. Beautiful matched chromed thin wall alloy sockets in a sturdy handsome steel tool box. Wt. 17 lbs. List price $62.90. Factory Special.....**$26.95**

MASTER AIR COMPRESSOR

(Item 209) High pressure type for large volume of air for heavy duty service. For paint spraying, inflating truck and auto tires, greasing, and the hundreds of other jobs done by compressed air. Piston type. 2" bore compressor with built-in air filter. Master built with hi-strength alloys and precision bearings. Stainless steel tank, 12"x24", 2100 cu. in. cap. Safe up to 500 lbs. Equipped with automatic switch that starts and stops motor to maintain desired pressure (up to 150 lbs.) and check valve, safety valve, gauge, shut-off valve, 20 ft. air hose and tire chuck. Beautifully balanced on ball bearing wheels and rubber tires. Low factory prices.
With ⅓ hp. 110 v. A.C. motor (Reg. $175.00) (Item 209).....**$98.50**
With ½ hp. motor (Reg. $199.50) (Item 209A).....**$119.50**
With 2 hp. Briggs Gas Engine (Reg. $199.50) (Item 209B).....**$109.50**
Write for price of compressor only. A complete line of spray guns and air tanks available.

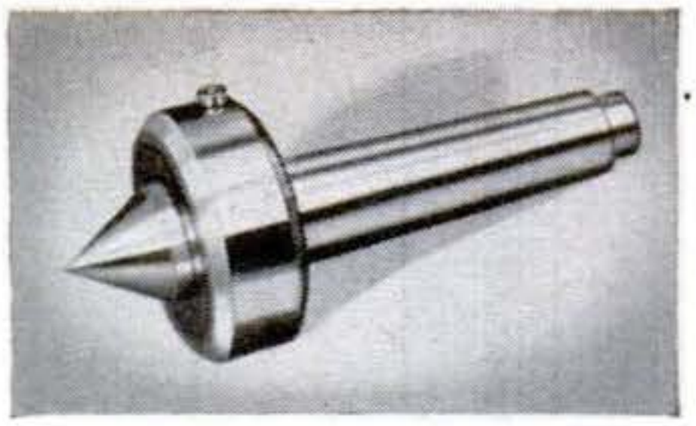
Prices f.o.b. Factory. 10 day Money back guarantee. Send check or Money Order
MASTER MECHANIC MFG. CO., DEPT. 94-B Burlington, Wis.

Copyrighted material



CENTERS AND DRILL PADS

STEEL AND BRASS COLLETS



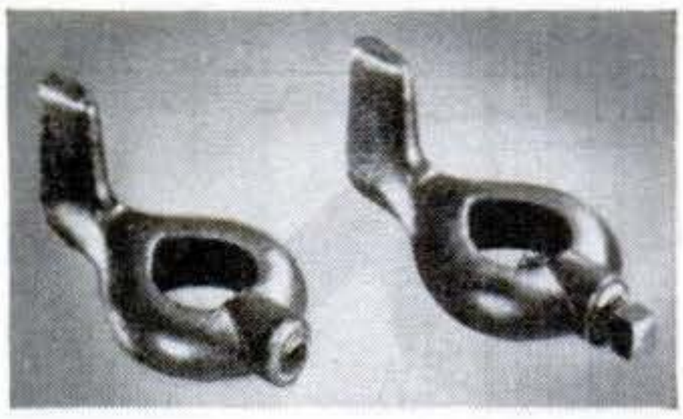
BALL BEARING LIVE CENTER

HANDWHEEL COLLET ATTACHMENT

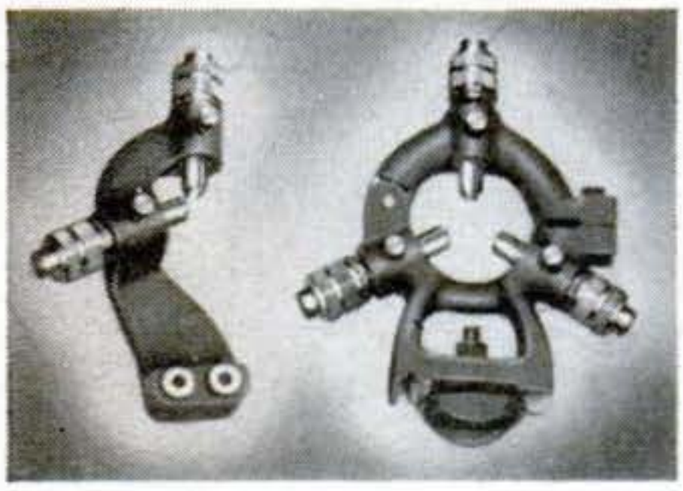
Get More Use Out of Your Lathe

WITH THESE

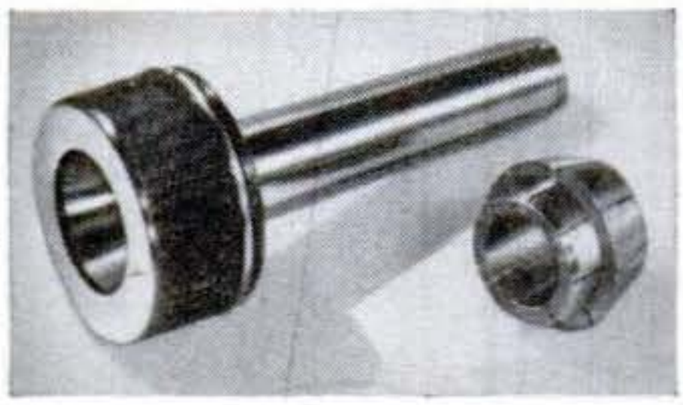
SOUTH BEND ATTACHMENTS



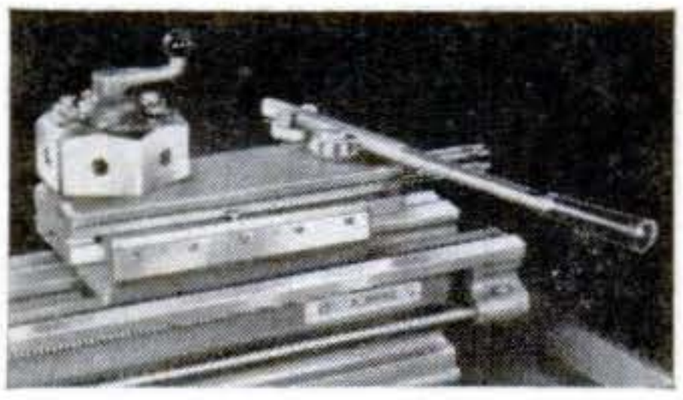
SAFETY and STANDARD LATHE DOGS



FOLLOWER AND STEADY RESTS



ADJUSTABLE COLLET BUSHING CHUCK

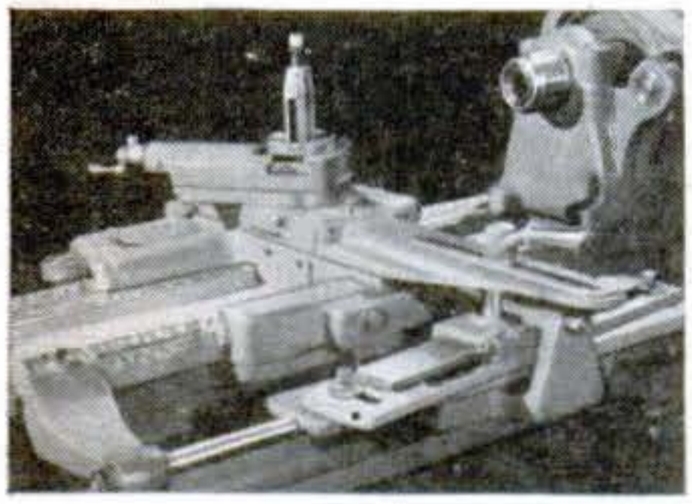


HANDLEVER BED TURRET

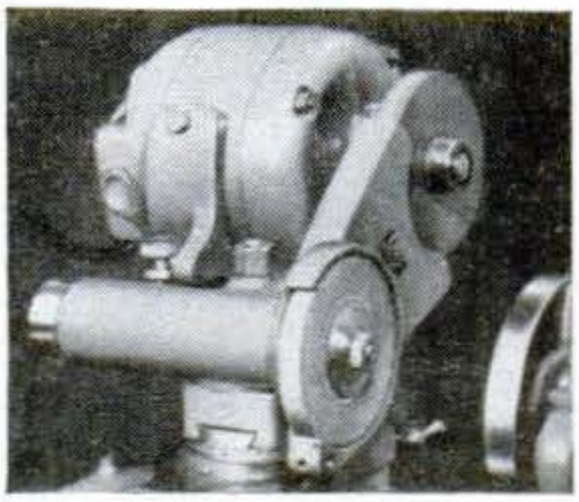
South Bend Attachments will enable you to do more and better lathe work. Write for our new Attachment Catalog.

SOUTH BEND LATHE

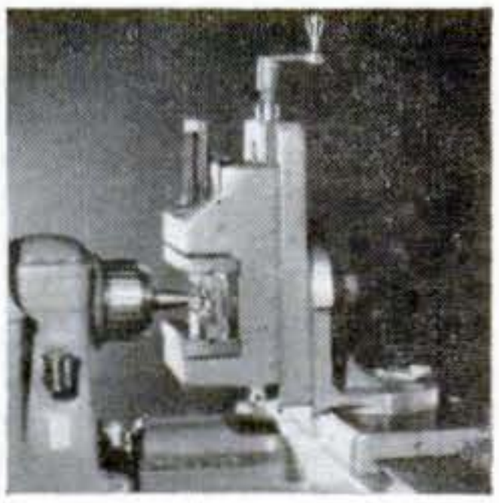
BUILDING BETTER TOOLS SINCE 1906 • SOUTH BEND 22, INDIANA



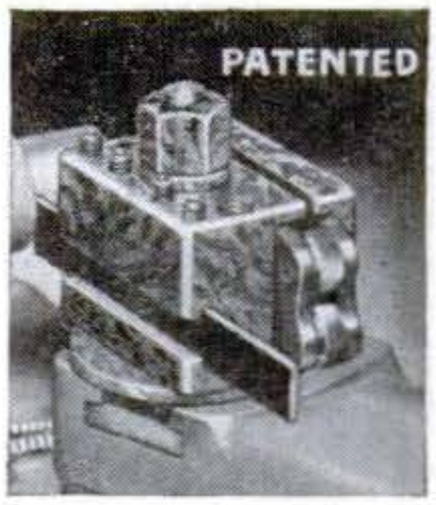
TELESCOPIC TAPER ATTACHMENT



EXTERNAL GRINDER



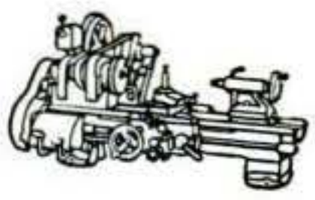
MILLING ATTACHMENT

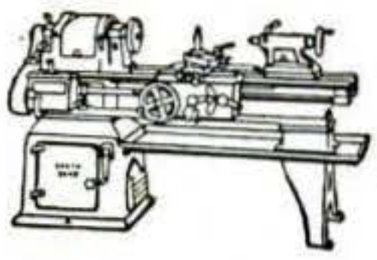


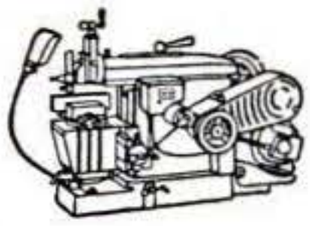
10 in 1 TOOL BLOCK

Send this Information:

CATALOG







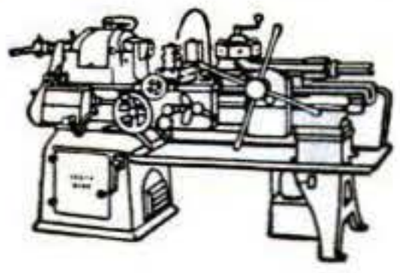
☐ LATHE TOOLS, ATTACHMENTS ☐ 9" and 10" BENCH LATHES ☐ 10" TO 16-24" FLOOR LATHES ☐ 14" DRILL PRESSES ☐ 7" BENCH SHAPERS

Name_____

Street_____

City_____ Zone_____ State_____

☐ ½" and 1" Collet TURRET LATHES



Copyrighted material

Save Money on Home Up

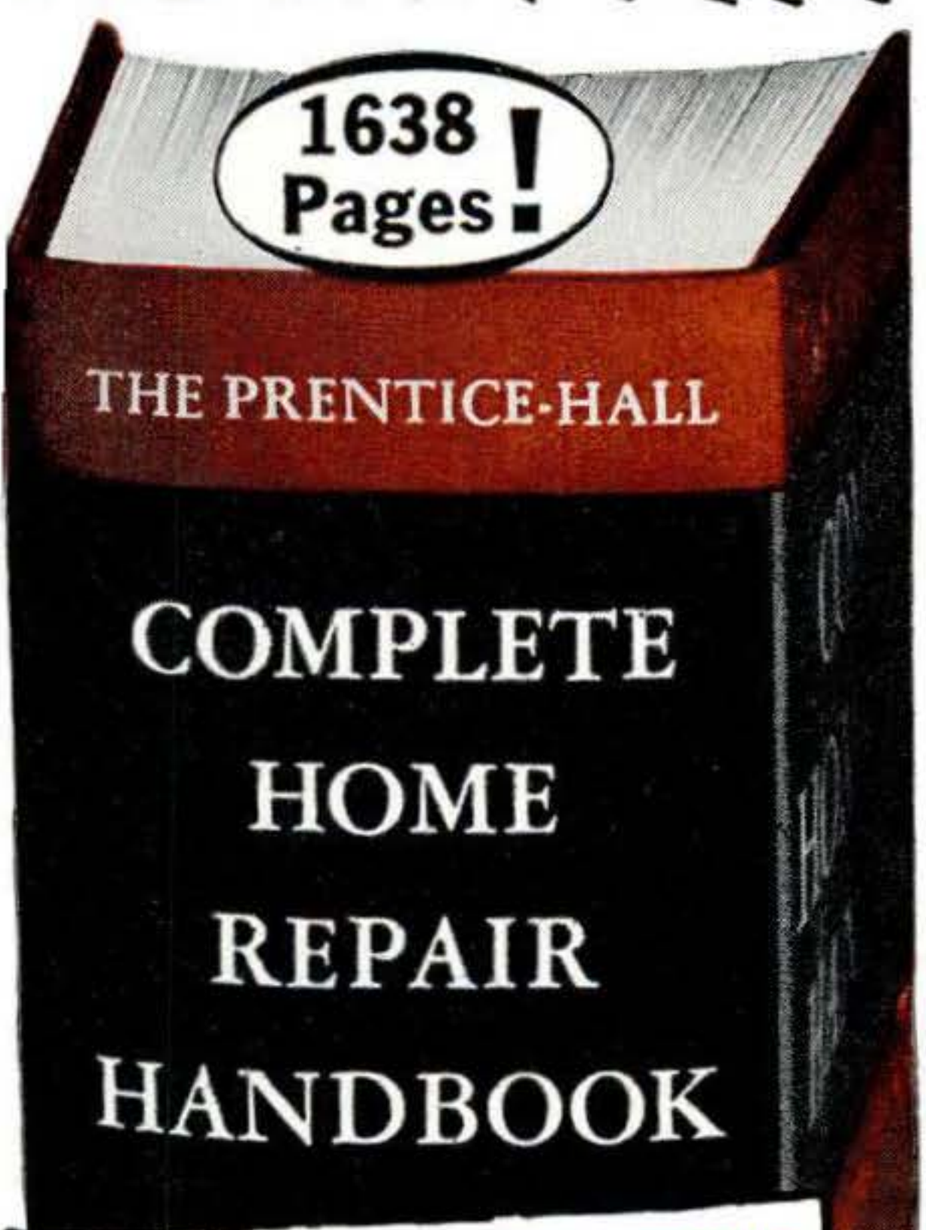
with this 1638 page GIANT

THE PRENTICE-HAL

COMPLETE HOME REPAIR HANDBO

BRAND NEW AND COMPLETELY UP-TO-DATE! 1638 PAGES OVER 1500 ILLUSTRA

30-DAY TRIAL
without risk or obligation



These are Typical of the Savings YOU Can Ma

- Creaky Stair Treads replaced for $1.00 instead of $15.0
- Pipe Leak repaired for 5¢ instead of $3.00!
- Kitchen Cupboards built for under $25 instead of $25
- Screens & Stormsash built for $70 instead of $180!
- Wall Switch installed or replaced for $1.75 instead of $7.5
- Reupholstering Sofa & Chair for $10 instead of $125!
- Driveway constructed for $75 instead of $200!
- Outdoor Fireplace built for $45 instead of $150!
- Vacuum Cleaner repaired for $1.65 instead of $10!

You'll get back the low price of this book in the very first month you c it. After that, it will save you money every month of the year. You'll s plumber's bills, carpenter's bills, electrician's bills, painter's bills, bri layer's bills. For with this remarkable Handbook you can easily d professional job of repairing or improving any part of your house — SAVE UP TO 90% of what it would cost to hire the work done!

"SHOW HOW" ILLUSTRATIONS—MORE THAN 1500 OF THEM—GIVE YOU CL EASY-TO-FOLLOW GUIDANCE. Large clear pictures, drawings and diagrams s you just where to start on any job, what step to tackle next, and how to tackl Full dimensions are included in every working drawing. In many instances you do a complete job just by following step-by-step directions on the illustrations, w out even referring to the text. You get complete money-and-time-saving direction HUNDREDS of home repairs and improvements.

THE WORLD'S GREATEST BUILDING AUTHORITIES CONTRIBUTED EXPERT DATA FOR THIS MAMMOTH VOLUME

Professional methods recommended for best results in repair and maintenance of your home were contributed by:

Anaconda Brass
Armstrong Cork Company
Asphalt Roofing Industry Bureau
American Steel & Wire
American Structural Products Company
Black & Decker Mfg. Co.
Brown & Sharpe Mfg. Co.
Bendix Home Appliances, Inc.
Cornell University
Copper & Brass Research Association
Crane Company
Henry Disston & Sons, Inc.
Delta Power Tool Division—
Rockwell Manufacturing Co.
E. I. du Pont Nemours & Company, Inc.
Devoe & Raynolds Company, Inc.
Delco Appliance Division—
General Motors Corporation
General Electric Company
Institute of Boiler and Radiator Mfrs.
S. C. Johnson & Son, Inc.
Johns-Manville
Minneapolis-Honeywell Regulator Company
Norge Division—Borg-Warner
Nicholson File Company
Portland Cement Association
Pittsburgh Plate Glass Company
Philco Corporation
Stanley Tools
L. S. Starrett Company
Toastmaster Products
United States Rubber Company
United States Plywood Corp.
United States Steel
U. S. Gypsum Corporation
Victor Electric Products
Institute

Here is just a glimpse of what you will find in its 1638 pag

INTERIOR REPAIRS. How to repair sagging floors —How to fill cracks in floors—Laying linoleum— How to fit and hang doors—Replacing sash cords — Applying weather stripping — How to repair lamp sockets—How to replace electric switches— How to repair electric motors—Repairing leaks in piping—Eliminating noises in plumbing and heating system—Draining plumbing system—Repairing loose, cracked or bulging plaster—Replacing wall and floor tile—Waterproofing basement walls and floors—removing old wallpaper— Painting and Paperhanging.

EXTERIOR MAINTENANCE & REPAIRS. How to locate and repair leakage points on roofs—Reroofing procedures—Shingling—Roll roofing—Repairs to gutters and leaders — Inspection and cleaning of septic tank—Patching cracks in concrete walks and walls—Removal of stains from concrete or brick—Exterior painting—How to avoid blistering, cracking, flaking, alligatoring, wrinkling on exterior paint jobs.

FURNITURE UPHOLSTERY & REPAIRS. How to replace defective stuffing, springs, webbing—How to pad seats—How to nake cushions—Foam-rubber upholstering — Repairing broken spindles, rails, legs—Correcting sticky drawers—How to repair scratches, dents and nicks—Furniture refinishing.

HOME IMPROVEMENTS & APPLIANCES. Remodeling basements and attics—Constructing porch screens, storm doors and windows—Building a stairway closet—Constructing garden furniture, fences, gates, pergolas, trellises—Installing three-way push button electrical switch — Installing cooler fans in windows—Air conditioning systems —Automatic coal stoker—How to check and repair electric iron, toaster, ironer, range, vacuum cleaner, dish washer, refrigerator, oil burner— Laying a cement or concrete floor—Building concrete sidewalks, driveways, outdoor fireplace.

WOODWORKING HAND TOOLS & MATERIALS. How to use handsaws, screwdrivers, planes, chisels and gouges, braces and bits, scrapers, squares, levels, clamps, sharpening tools—How to identify and properly use woods and wood products—Working with wood—How to make woodworking joints

METALWORKING HAND TOOLS & MATERI Metalworking saws, hammers, twist drills, pliers and nippers, wrenches, snips and sh cold chisels, taps and dies, soldering irons, —Bending and forming metal—Treating and ishing metal—Fasteners for metal work.

WOODWORKING POWER TOOLS. Proper checking, adjusting and maintenance of w turning lathe, circular saw, band saw, drill p jointers and shapers, sanders, power tool a sories—Cutting miters—Bead cutting—Re and Fluting — Making dovetail joints — Cu rabets and dados — Matched shaping — Tong and grooving—Multiple cutting.

METALWORKING POWER TOOLS. Operation maintenance of engine lathe, drill press, por electric hand drill, power tool accessories—R ing cuts—Finishing cuts—Facing—Boring— turning — Knurling — Thread cutting — Dri sheet metal—Countersinking—Commutators carbon brushes.

PLUMBING & HEATING MATERIALS. Proper and maintenance of all types of plumbing to Roughing-in materials — Determining size house drains—Fittings—Selecting correct size—Plumbing fixtures—Heating systems, water, steam, warm air—Stokers—Oil burne Chimneys and drafts—Automatic heating co —Domestic water heaters—Radiators and vectors—Radiant heating.

ELECTRICAL MATERIALS. Circuits — Outle Indoor and Outdoor Approved Wiring Materi Batteries — Transformers — Tools — Splici Methods of interior wiring—Remote-control ing system—Use and repair of motors— requirements.

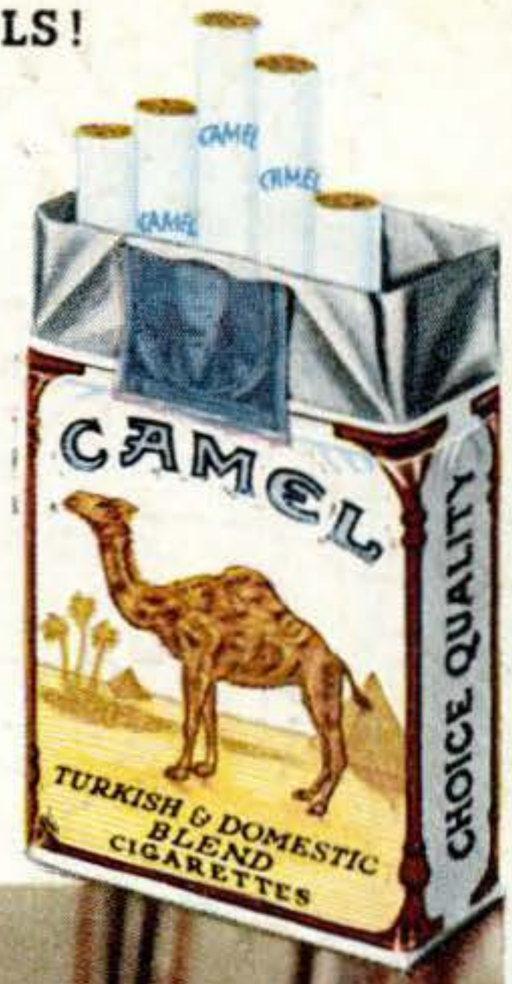
CONCRETE, PLASTERING, MASONRY. Metho mixing concrete—Placing or pouring concre Cold-weather procedures—Watertightness— position and application of stucco—Bricklayi Concrete blocks—Glass bricks or blocks—Pl ing materials and procedures—Plaster crac Prepared gypsum finishes.

PAINTING & DECORATING, TERMITE & CONTROL; HOME INSULATION.

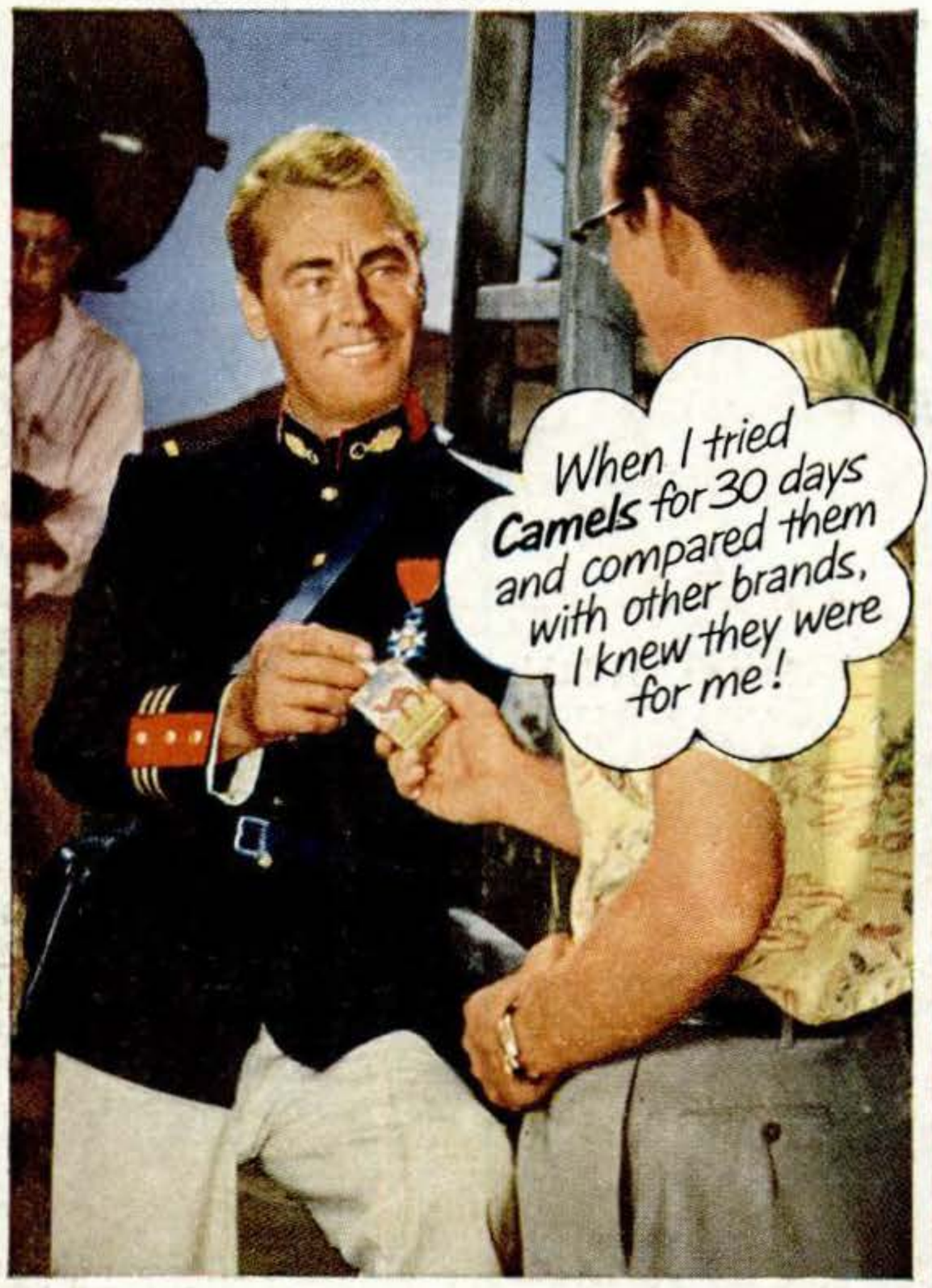
Copyrighted materi

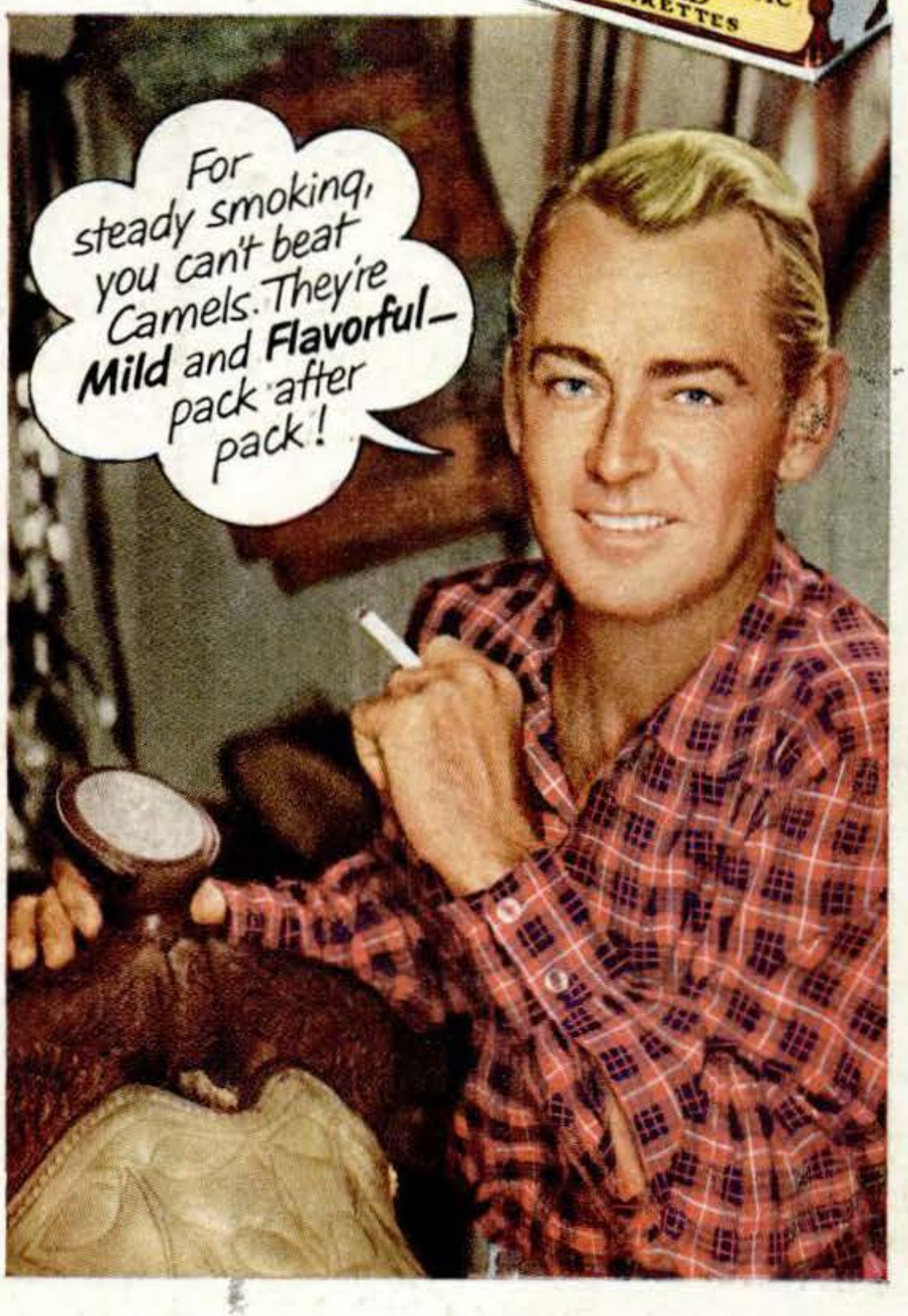
THERE MUST BE A REASON WHY MORE PEOPLE SMOKE CAMELS!

Why did you change to CAMELS, ALAN LADD?



R. J. Reynolds Tob. Co., Winston-Salem, N. C.





Like Alan Ladd, test Camels for 30 days... Find out for yourself the reason why Camel leads all other brands by billions of cigarettes per year! Do it this simple, sensible way: Make your own 30-day Camel mildness test. Smoke *only* Camels for 30 days. See how you keep enjoying Camel's rich, full flavor and cool, cool mildness — pack after pack! See how much more smoking pleasure you get from Camels than from any other cigarette! There *is* a reason why —

MORE PEOPLE SMOKE CAMELS

than any other cigarette!

Copyrighted material